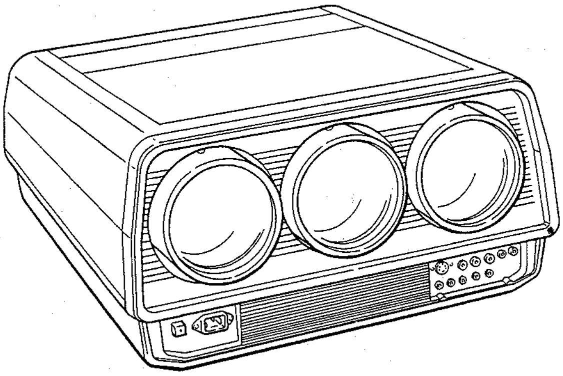
VPH-1001Q/1001QM/1044Q/1044QM
RM-PJ1044

SERVICE MANUAL

US Model
Canadian Model
VPH-1001Q
Chassis No. SCC-G90A-A
VPH-1044Q
Chassis No. SCC-G90B-A

AEP Model
VPH-1001QM
Chassis No. SCC-G89A-A
VPH-1044QM
Chassis No. SCC-G89B-A



Super Bright

Note: The service manual for **RM-PJ1044** has been issued separatly

MODELS OF THE SAME SERIES	
VPH-1001Q/1001QM	
VPH-1044Q/1044QM	

SPECIFICATIONS

Optical

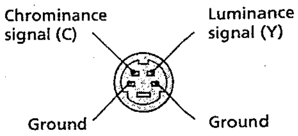
Projection system	3 picture tubes, 3 lenses, Direct projection system
Picture tube	7-inch high-brightness monochrome tubes, with coolant sealed
Projection lens	VPH-1001Q/1001QM High-performance hybrid lenses F1.0/130 mm VPH-1044Q/1044QM HACC (High-resolution Aspherical and Color Corrected) lenses F1.0/135 mm
Projected picture size	Factory-adjusted to 100 inches measured diagonally 70–250 inches measured diagonally adjustable by changing the parts
Light output	700 lm

General

Color system	PAL, SECAM, NTSC and NTSC4.43 systems, switched automatically
Resolution	700 TV lines (video input) 1,000 TV lines (RGB input)(VPH-1044Q/1044QM only)
Test signal	Cross-hair test pattern generator incorporated
Speaker	5 × 9 cm (2 × 3 1/2 inches), 1 unit, 1.5 W

Inputs

LINE IN
S VIDEO: 4-pin mini DIN connector
Y (luminance) signal: 1 Vp-p±2 dB, sync negative, 75 ohms terminated
C (chrominance) signal: burst 0.286 Vp-p±2 dB, 75 ohms terminated (NTSC)
0.3 Vp-p±2 dB, 75 ohms terminated (PAL)



VIDEO: BNC connector
Composite video input, 1 Vp-p±2 dB, sync negative, 75 ohms terminated
AUDIO: phono jack
VPH-1001Q/1044Q: –5 dBs, Impedance: more than 47 kohms
VPH-1001QM/1044QM: 500 mVrms, Impedance: more than 47 kohms

MICROFILM

COLOR VIDEO PROJECTOR

SONY®

RGB/COMPONENT IN (VPH-1044Q/1044QM only):
R,G,B: BNC connectors
Red, green, blue inputs
0.7 Vp-p±2 dB, 75 ohms terminated, positive
G SYNC: BNC connector
Sync on green input, 1 Vp-p±2 dB, 75 ohms terminated, positive
SYNC/HD: BNC connector
Composite sync input, 0.3–4 Vp-p, 75 ohms terminated, negative
Horizontal sync input, 0.3–4 Vp-p, 75 ohms terminated, negative
VD: BNC connector
Vertical sync input, 0.3–4 Vp-p, 75 ohms terminated, negative
R-Y, B-Y: BNC connectors
0.7 Vp-p
Y: BNC connector
1.0 Vp-p, sync negative, 75 ohms terminated
CONTROL S INPUT: stereo minijack, 5 Vp-p

Outputs
VIDEO OUT: BNC connector
Composite video output, 1 Vp-p±2 dB, impedance 75 ohms, output video signal from the LINE IN connector
* The separated Y and C signals input to the S VIDEO connector is output as a composite video signal.
CONTROL S OUTPUT: minijack, 5 Vp-p

Power requirements
VPH-1001Q/1044Q: 120V AC, 50/60 Hz
VPH-1001QM/1044QM: 220–240 V AC, 50/60 Hz

Power consumption
VPH-1001Q/1044Q: 230 W max, 3.0 A max.
VPH-1001QM/1044QM: 210 W

Dimensions
Approx. 532 × 288 × 597 mm (w/h/d)
(21 × 11 $^{3}/_{8}$ × 23 $^{5}/_{8}$ inches)
With the brackets pushed down, including the projection parts and controls

Mass
VPH-1001Q/1001QM: Approx. 30 kg (66 lb 2 oz)
VPH-1044Q/1044QM: Approx. 38 kg (83 lb 12 oz)

Accessories supplied
Remote Commander RM-PJ1044 with 3 AA (R6) batteries
Remote control receiver (1)
Remote control cable 1.5m (4 feet 11$^{1}/_{8}$ inches)/15m (49 feet 11$^{5}/_{8}$ inches) (1 each)
AC power cord (1)
Screws (4)
Spacer for 200" front projection (4)
0.2 mm spacer ① (9)
0.8 mm spacer Ⓢ for 100" rear projection (3)

Design and specifications are subject to change without notice.

Accessories (not supplied)

Projector suspension support PSS-722, PSS-10
Projector pedestal SU-722
Screen VPS-80 FH (80" flat)
VPS-100FH (100" flat)
VPS-120FH (120" flat)
VPS-72HG1 (72" curved)
VPS-100HG1 (100" curved)
VPS-700R (70" rear projection)

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÈS PAR UNE TRAME ET PAR UNE MARQUE ⚠ SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIECES SONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÉCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DE CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT SONT IDENTIFIES DANS LE PRÉSENT MANUEL. SUIVRE CES PROCÉDURES LORS DE CHAQUE REMPLACEMEMT DE COMPOSANTS CRITIQUES, OU LORSQU'UN MAUVAIS FONCTIONNEMENT EST SUSPECTÉ.

SAFETY CHECK-OUT
(US Model only)

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).
   Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60–100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

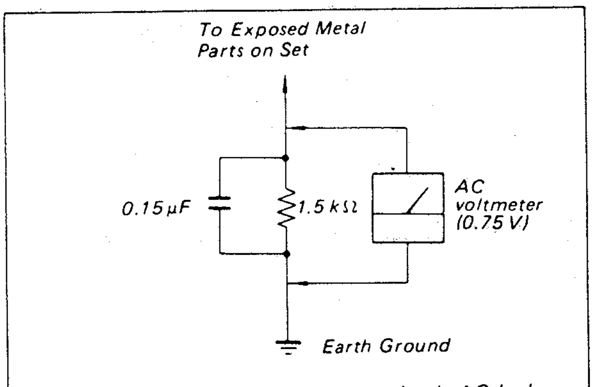


Fig. A. Using an AC voltmeter to check AC leakage.

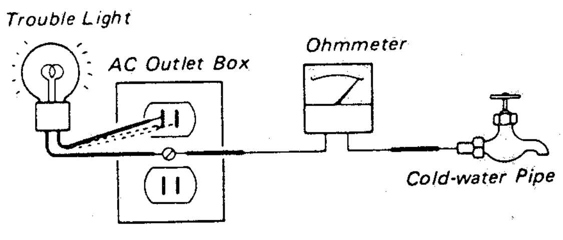


Fig. B. Checking for earth ground.

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SECTION 1
GENERAL

The operating instructions and Installation Manual for Dealers manual mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual Installation Manual for Dealers manual remain as in the manual.

OPERATING INSTRUCTIONS

1-1. FEATURES

Bright image—light output of 700 lumen

A newly developed phosphor and electron gun provide a high-quality image with extra sharpness and brightness.

Clear color reproduction—high-quality circuit

A high quality picture is obtained by combining the use of a three-line logical comb filter to reduce dot interference and cross color, and the use of a new chroma transient circuit to improve color sharpness by removing color blur.

Component signal input (VPH-1044Q/1044QM only)

The projector is equipped with a component signal input to accept high-quality video format component signals used for TV broadcasting services including program production.

Wireless and wired remote control

You can operate your projector from a distance with the supplied Remote Commander and remote control receiver. You can also use the Commander as a wired Commander by connecting it to the projector.

Other features

- **Four color systems available**
  The PAL, SECAM, NTSC or NTSC$_{4.43}$ color system is selected automatically.
- **Illuminated Remote Commander and control panel**
  When you press the LIGHT button on the Remote Commander or you open the control panel cover, the key indicators are illuminated for proper operation in low light.
- **Various installation possibilities**
  The projector is designed to be installed on a desk, the floor or on the ceiling and can be used with a flat screen, curved screen or rear projection screen.
- **Internal test signal**
  The centering adjustment can be performed easily by projecting the built-in cross-hair test signal. No external test signal is needed.

1-2. PRECAUTIONS

On safety

- Check that the operating voltage of your unit is identical with the voltage of your local power supply. If voltage adaptation is required, consult your Sony dealer or qualified personnel.
- Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it further.
- Unplug the unit from the wall outlet or set the MAIN POWER switch to OFF if it is not to be used for several days.
- To disconnect the cord, pull it out by the plug. Never pull the cord itself.
- The unit is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the unit itself has been turned off.

On installation

- Allow adequate air circulation to prevent internal heat build-up. Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation holes.
  Be aware that room heat rises to the ceiling; check that temperature near the installation location is not excessive.
- Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust or humidity, mechanical vibration or shock.
- To avoid moisture condensation, do not install the unit in a location where the temperature may rise rapidly.

On cleaning

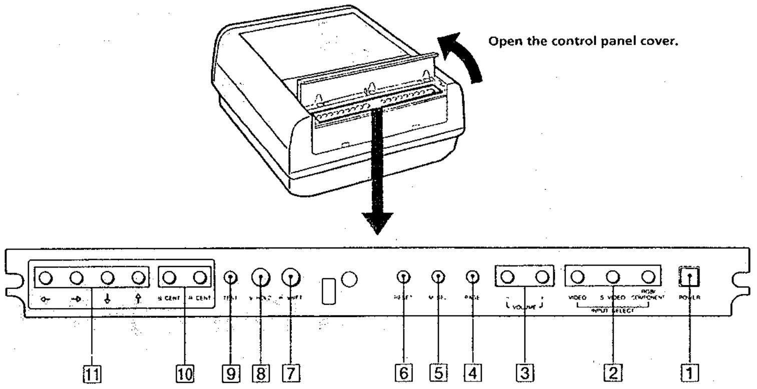
- To keep the cabinet looking brand-new, periodically clean it with a soft cloth. Stubborn stains may be removed with a cloth lightly dampened with a mild detergent solution. Never use strong solvents, such as thinner or benzene, or abrasive cleansers since these will damage the cabinet.
- Avoid touching the lens. To remove dust on the lens, use a soft dry cloth. Do not use a damp cloth, detergent solution, or thinner.

On repacking

- Save the original shipping carton and packing material; they will come in handy if you ever have to ship your unit. For maximum protection, repack your unit as it was originally packed at the factory.

1-3. LOCATION AND FUNCTION OF CONTROLS

Control Panel



1 **POWER switch**
Press to turn the projector on and off.

2 **INPUT SELECT buttons**
Press to select the input signal.
VIDEO: to select the signal input from the LINE IN VIDEO connectors
S VIDEO: to select the signal input from the LINE IN S VIDEO connectors
RGB/COMPONENT (VPH-1044Q/1044QM only): to select the signal input from the RGB/COMPONENT IN connectors

3 **VOLUME +/– buttons**
Press to adjust volume.
+: to increase volume
–: to decrease volume

4 **PAGE button**
Press to display three on-screen displays. You can check and change various control settings. Each time you press the button, the following display appears: USER PRESET, PICTURE CONTROL and SYSTEM PRESET.

5 **M SEL (memory select) button**
Press to select the memory position of the picture adjustment levels.

6 **RESET button**
Press to restore the picture adjustment levels to the standard levels. The button functions while the PICTURE CONTROL display or the adjustment level is displayed on the screen.

7 **H SHIFT (horizontal shift) control (VPH-1044Q/1044QM only)**
Turn to adjust the horizontal position of the RGB input picture.

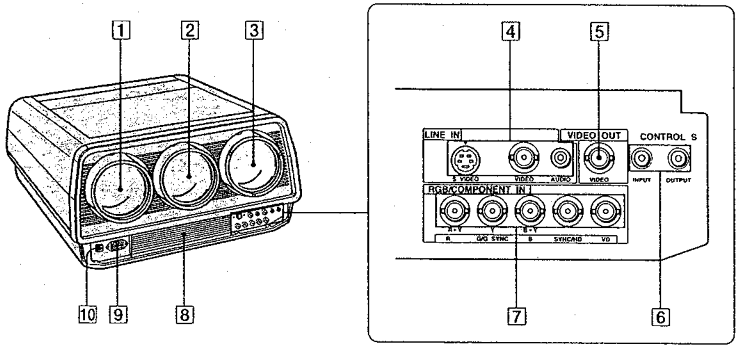
8 **V HOLD (vertical hold) control**
If the picture rolls vertically, turn to stabilize the picture.

9 **TEST button**
Press to display the test pattern to check the centering of the three colors, red, green and blue. To restore the normal screen, press it again.

10 **CENT R/B buttons**
Press to enter the red and blue centering adjustment mode.
CENT R: to enter the red centering adjustment mode.
CENT B: to enter the blue centering adjustment mode.
To perform the centering adjustment, use the four arrow buttons.
To return to the normal display, press the same button again.

11 **Arrow buttons**
Use these buttons for various adjustment functions.

Front (Connector Panel)



1 **Red lens**

2 **Green lens**

3 **Blue lens**

4 **LINE IN connectors**
S VIDEO connector (4-pin mini DIN)
Connect to the S video output of a VCR.
VIDEO connector (BNC)
Connect to the video output of a VCR.
AUDIO jack (phono)
Connect to the audio output of video equipment.

5 **VIDEO OUT connector (BNC)**
Connect to the video input of a color monitor.

6 **CONTROL S INPUT/OUTPUT jacks**
Connect to the CONTROL S jacks of other Sony equipment.
CONTROL S INPUT (stereo mini): Connect to the CONTROL S output jack of the supplied remote control receiver for wireless remote control with the supplied Remote Commander. If you connect to the CONTROL S OUT jack of the Remote Commander, you can use the Commander as a wired Commander.
CONTROL S OUTPUT (mini): The signal from the CONTROL S INPUT jack is output. Connect to the CONTROL S INPUT jack of another projector when two or more projectors are used.

7 **RGB/COMPONENT IN connectors (BNC) (VPH-1044Q/1044QM only)**
R, G/G SYNC, B, SYNC/HD, VD connectors: Connect to the analog RGB outputs of a video camera or other video equipment.
R-Y, Y, B-Y connectors: Connect to video equipment that output component signals, such as Sony Betacam.

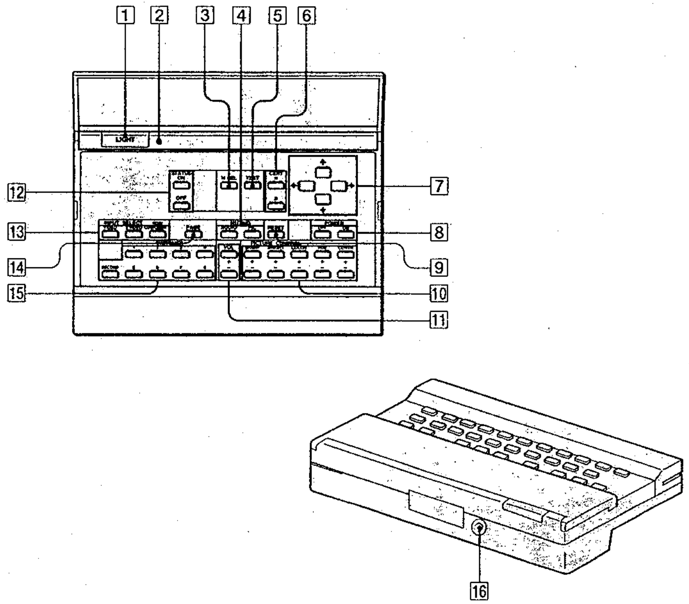
8 **Speaker**

9 **AC IN socket**
Connect the supplied AC power cord (mains lead).

10 **MAIN POWER switch (▬ ON/■ OFF)**
Press to turn the main power on and off.

Remote Commander RM-PJ1044

The buttons on the Remote Commander and on the control panel of the projector with the same name have the same function.



1 **LIGHT button**
Press to light the button indicators.
If you do not operate any button within about 30 seconds, the light automatically goes off.

2 **Transmitter indicator**
The light turns on each time a button is pressed. When the indicator does not light, replace the batteries.

3 **M SEL (memory select) button**

4 **MUTING buttons**
AUDIO: Press to mute the sound. To restore the sound, press it again or VOL +.
PIC (picture): Press to cut off the picture. To restore the picture, press it again or CONTR +.

5 **TEST button**

6 **CENT R/B buttons**

7 **Arrow buttons**

8 **POWER ON/OFF buttons**
Press to turn the projector on and off.

9 **RESET button**

10 **PICTURE CONTROL buttons**
Press to adjust picture condition, contrast, hue, color, brightness and sharpness.

11 **VOL (volume) +/– buttons**

12 **STATUS ON/OFF buttons**
Press OFF to eliminate the on-screen display.
Press ON to restore the on-screen display.
Note
The page displays, cautions and messages are displayed even in the OFF mode.

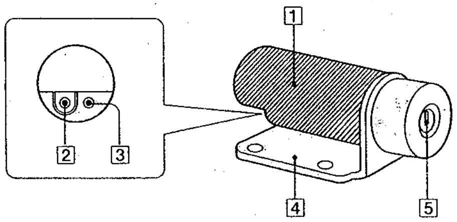
13 **INPUT SELECT buttons**

14 **PAGE button**

15 **SWITCHER buttons**
When the PC-1271/1271M switcher is connected, press to select the input from the switcher. When two switchers are connected, press the SECOND button, then the number buttons to select input from the second switcher (whose SINGLE/OTHER/SECOND switch is set to SECOND.)

16 **CONTROL S OUT jack (mini)**
Connect to the CONTROL S INPUT jack of the projector using the supplied remote control cable for wired remote control operation.

Remote Control Receiver



1 **Remote sensor (inside)**
The remote control signal transmitted from the Remote Commander passes through the casing.

2 **CONTROL S output jack (stereo mini)**
Connect to the CONTROL S INPUT jack of the projector using the supplied remote control cable for wireless remote control operation.

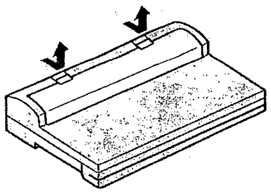
3 **DC IN (DC input) 6V jack**
Do not connect any equipment to this jack.

4 **Mounting bracket**

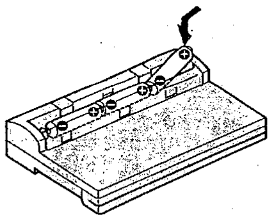
5 **Mounting bracket fastening screw**

Battery installation

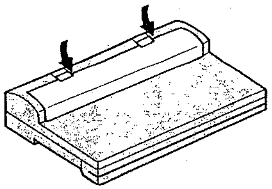
1 Push to open the lid.



2 Install three R6 (AA) batteries with the correct polarity.



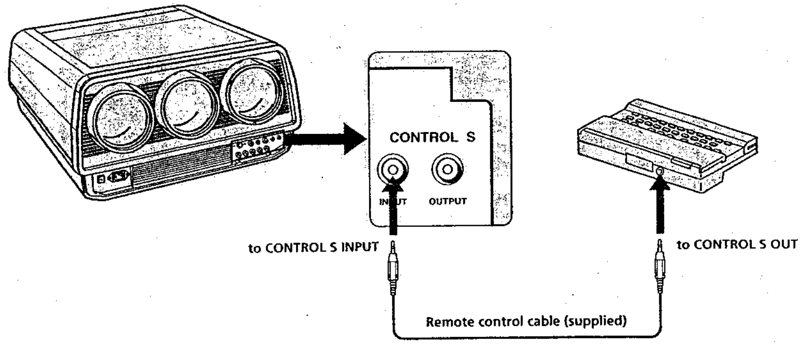
3 Replace the lid.



Notes

- If the projector does not operate properly, the batteries might be worn out. Replace all three of them with new batteries.
- The life of the batteries depends on frequency of usage and how often you use the LIGHT button. If they wear out quickly, replace them with new alkaline batteries.
- To avoid damage from possible battery leakage, remove the batteries when the Commander will not be used for a long time.

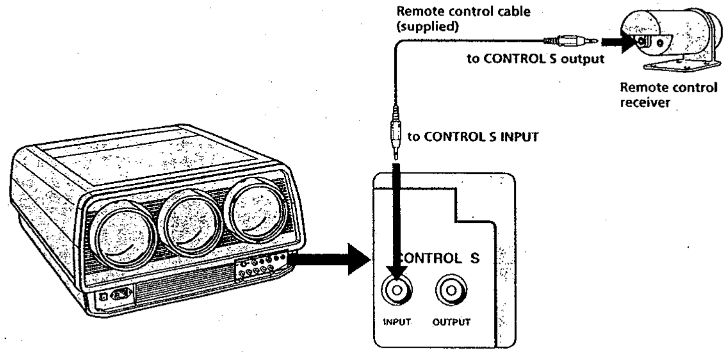
To connect the Remote Commander to the projector for wired remote control operation


CONTROL S
INPUT
OUTPUT
to CONTROL S INPUT
to CONTROL S OUT
Remote control cable (supplied)

Note

Use the 1.5 m (4.9 feet) or 15 m (49.2 feet) remote control cable (supplied) according to the distance between the projector and the Remote Commander.

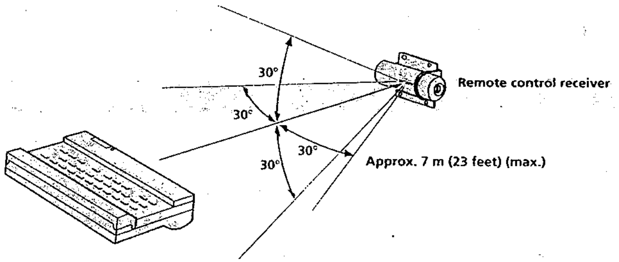
To connect the supplied remote control receiver to the projector


Remote control cable (supplied)
to CONTROL S output
Remote control receiver
to CONTROL S INPUT
CONTROL S
INPUT
OUTPUT

Note

Use the 1.5 m (4.9 feet) or 15 m (49.2 feet) remote control cable (supplied) according to the distance between the projector and the receiver.

Operable range of wireless remote control operation

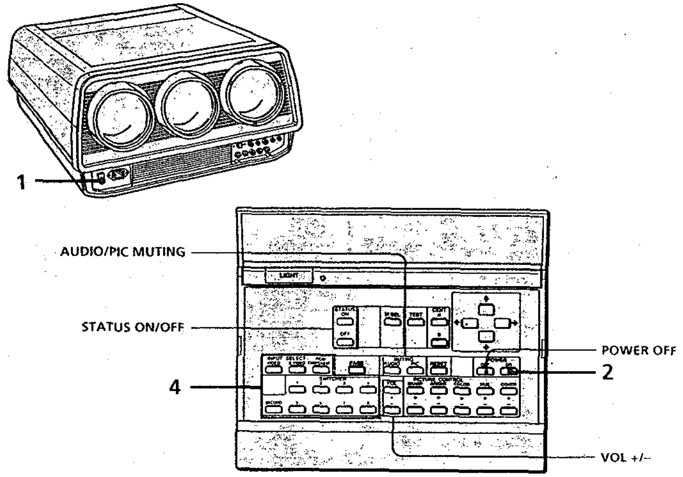

30°
30°
30°
30°
Remote control receiver
Approx. 7 m (23 feet) (max.)

Notes

- Be sure that there are no obstructions between the Commander and the receiver.
- Operable range is limited. The shorter the distance between the Commander and the receiver, the wider the angle within which the Commander can control the projector.

1-4. PROJECTING

You can also use the buttons on the control panel with the same names as those on the Remote Commander to operate the projector.



1 **Press down the MAIN POWER switch of the projector (▬ ON).**

2 **Turn on the power by pressing the POWER ON button.**

3 **Turn on the connected equipment.**

4 **Press the INPUT SELECT button to select the input signal to be projected.**
VIDEO: to select the signal input from the LINE IN VIDEO connector
S VIDEO: to select the signal input from the LINE IN S VIDEO connector
RGB/COMPONENT (VPH-1044Q/1044QM only): to select the signal input from the RGB/COMPONENT IN connectors
To project the RGB or component signal, press the PAGE button until the SYSTEM PRESET display appears. Press the ↑ or ↓ button to select RGB/COMPONENT and select RGB or COMPONENT with the ← or → button.

When the PC-1271/1271M switcher is connected
Select the input with the SWITCHER number buttons on the Remote Commander. If two switchers are connected, first press the SECOND button, then the SWITCHER number button to select the input from the second switcher (whose SINGLE/OTHER/SECOND switch is set to SECOND.)

To turn off the power

To turn off the projector
Press the POWER OFF button or the MAIN POWER switch on the projector.
If the projector is turned off with the MAIN POWER switch, the projector is turned on again only by the MAIN POWER switch.

To turn off the main power
Press the MAIN POWER switch on the projector.
If you turn off the main power with the POWER OFF button and the MAIN POWER switch, the projector is in standby mode when you press the MAIN POWER switch.
Press the POWER ON button to turn on the projector.

To adjust the volume

Press the VOL +/– button.
+: to increase the volume
–: to decrease the volume

To eliminate the on-screen display

Press the STATUS OFF button.
The page displays, cautions and messages are displayed even in OFF mode.
To restore the on-screen display, press the STATUS ON button.

To cut off the sound or picture

To mute the sound
Press the AUDIO MUTING button. To restore the sound, press the AUDIO MUTING button again or VOL + button.

To cut off the picture
Press the PIC MUTING button. To restore the picture, press the PIC MUTING button again or CONTR + button.

If the picture rolls vertically

Turn the V HOLD control on the projector until the picture stabilizes.

To adjust the horizontal position of the RGB input picture (VPH-1044Q/1044QM only)

Turn the H SHIFT control until the picture fits the screen.

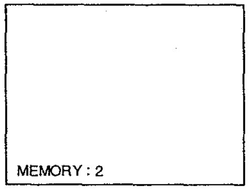
Adjusting the Picture

Three adjustment level patterns for the video and component input pictures and one pattern for the RGB input picture, respectively, are stored in the projector's memory. You can recall them by pressing the M SEL button.

1 **Press the M SEL button to select the memory position 1, 2 or 3.**
Each time you press the button, the memory position changes as follows: MEMORY 1 → MEMORY 2 → MEMORY 3 → MEMORY STD (standard).

In the MEMORY STD position, the adjustment levels are preset to the standard levels set at the factory, and you can not change them.

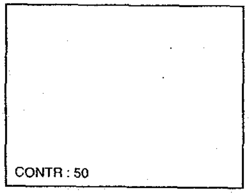
Note
When the input signal is RGB, the memory position changes as follows: MEMORY 1 → MEMORY STD.



2 **Press the PICTURE CONTROL button.**
The adjustment levels are digitally displayed on the screen having a range of MIN, 1, 2,..., 98, 99, MAX.

CONTR +/– keys	+: to increase picture contrast –: to decrease picture contrast
HUE +/– keys	+: to make skin tones greenish –: to make skin tones purplish
COLOR +/– keys	+: to increase color intensity –: to decrease color intensity
BRIGHT +/– keys	+: to make the picture brighter –: to make the picture darker
SHARP +/– keys	+: to make the picture sharper –: to make the picture softer

The adjustment levels are stored in the selected memory position.



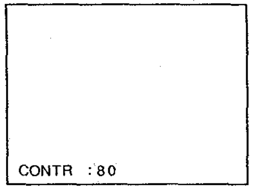
Notes
- The COLOR, SHARP and HUE controls do not function when the input signal is RGB or when no signal is input.
- The HUE control does not function when the input signal is PAL, SECAM or COMPONENT.
- The COLOR and HUE controls do not function when the input signal is black and white.

To recall the picture adjustment levels stored in the memory position

Press the M SEL button.
Each time you press the M SEL button, you can select the following memory positions : MEMORY 1 → MEMORY 2 → MEMORY 3 → MEMORY STD

To restore the factory preset level

Press the RESET button while the picture control item is displayed.
The factory preset level is displayed.



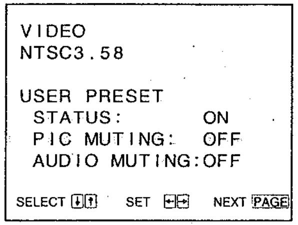
When you select the MEMORY STD position

You can obtain the picture with the standard levels for all the adjustment items. The standard levels are the same as those obtained when you press the RESET button.

Displaying the Current Control Settings

Press the PAGE button to display the following on-screen displays. You can change various settings on these displays. Each time you press the PAGE button, the display switches as follows: USER PRESET → PICTURE CONTROL → SYSTEM PRESET.

USER PRESET



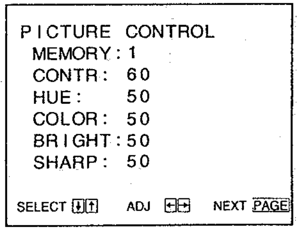
```
VIDEO
NTSC3.58

USER PRESET
  STATUS:        ON
  PIC MUTING:    OFF
  AUDIO MUTING:OFF
```

VIDEO (S VIDEO, RGB*, COMPONENT*) ***VPH-1044Q/1044QM only**	Current input signal
NTSC3.58 (NTSC4.43, PAL, SECAM, B & W)	Current input color source
STATUS: ON/OFF	On-screen display does not appear in OFF mode.
PIC MUTING: ON/OFF	The picture does not appear in ON mode.
AUDIO MUTING: ON/OFF	The sound is muted in ON mode.

The items that do not function with the current input signal do not appear on the display.
To change the settings, select the item with the ↑ or ↓ button and change it with the ← or → button.

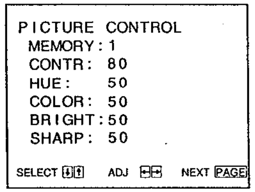
PICTURE CONTROL



```
PICTURE CONTROL
 MEMORY: 1
 CONTR:  60
 HUE:    50
 COLOR:  50
 BRIGHT: 50
 SHARP:  50
```

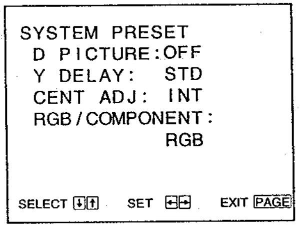
The current picture condition of each memory position, contrast, hue, color, brightness and sharpness, is displayed. The controls that do not function with the current input signal do not appear on the display.
To check other memory positions, press the ↑ or ↓ button to select MEMORY and select the desired memory position with the ← or → button.
To adjust the picture adjustment levels, select the item with the ↑ or ↓ button (the selected item is colored yellow) and adjust it with the ← or → button. For details on adjustment, see page 14.

To restore the factory preset levels for all the items
Press the RESET button while the PICTURE CONTROL display is displayed. The factory preset levels for all the items are displayed.



```
PICTURE CONTROL
 MEMORY: 1
 CONTR:  80
 HUE:    50
 COLOR:  50
 BRIGHT: 50
 SHARP:  50
```

SYSTEM PRESET



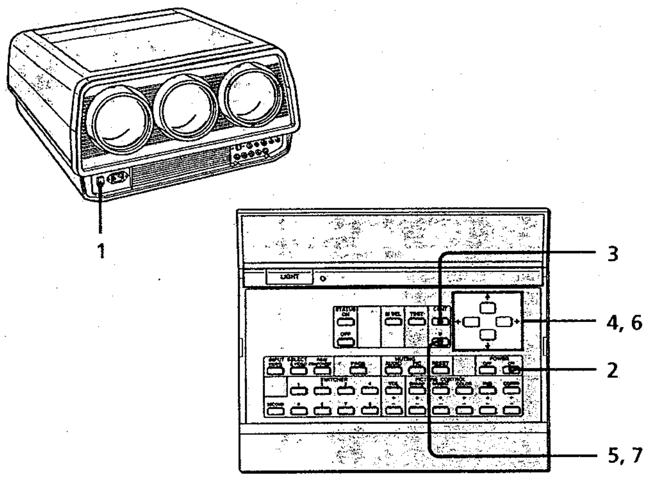
```
SYSTEM PRESET
 D PICTURE:OFF
 Y DELAY:   STD
 CENT ADJ:  INT
 RGB/COMPONENT:
              RGB
```

D PICTURE	**ON:** to enhance the contrast, providing a dynamic image. **OFF:** to display a dark portion faithfully according to the video source.
Y DELAY	Luminance and chroma (color) signals may be transmitted with a slight time lag depending on the video equipment. This results in color shift on the displayed picture. If this happens, adjust the Y DELAY as follows: **+:** when color shift is to the right **STD (standard):** Normally set to this position. **–:** when color shift is to the left
CENT ADJ	Set when you perform the centering adjustment. **INT (internal):** to perform the centering adjustment with the built-in cross-hair test signal **EXT (external):** to perform the centering adjustment using an external signal
RGB/COMPONENT (VPH-1044Q/ 1044QM only)	Select the input signal from the RGB/COMPONENT IN connectors. **RGB:** to select the RGB signal **COMPONENT:** to select the component signal

1-5. CENTERING ADJUSTMENT

The three colors, red, green and blue, must converge for proper projection. If you move the projector to another location, you have to perform the centering adjustment. The following are the procedures for using a built-in test pattern.

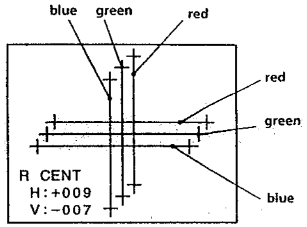
You can also perform the centering adjustment using an external test signal without displaying a test pattern. To use an external signal, change the CENT ADJ setting on the SYSTEM PRESET page. (See page 17.)



1 **Press down the MAIN POWER switch of the projector.**

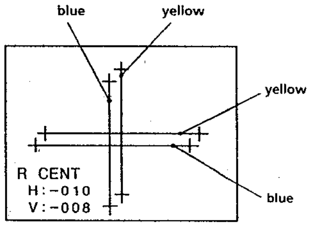
2 **Turn on the power by pressing the POWER ON button.**

3 **Press the CENT R button.**
The built-in cross hair test pattern is displayed and you can adjust the red lines.

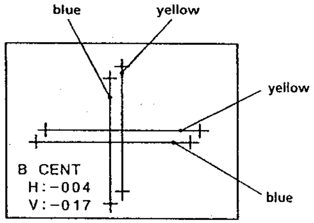


4 **Press the arrow buttons to move the horizontal and vertical red lines until they converge with the center green lines and are seen as yellow.**
The red lines move according to the direction of the arrow.

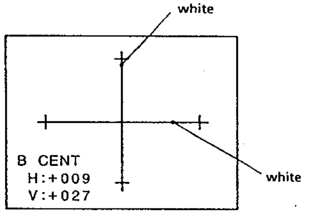
H: Horizontal adjustment level (MIN, –126 – +126, MAX)
V: Vertical adjustment level (MIN, –126 – +126, MAX)



5 **Press the CENT B button.**
You can adjust the blue lines.



6 **Press the arrow buttons to move the horizontal and vertical blue lines until they converge with the yellow lines.**
When all three color lines converge, the test pattern is seen as white.



7 **Press the CENT B button.**
The adjustment levels are stored and the normal display is restored.

To check the current centering condition

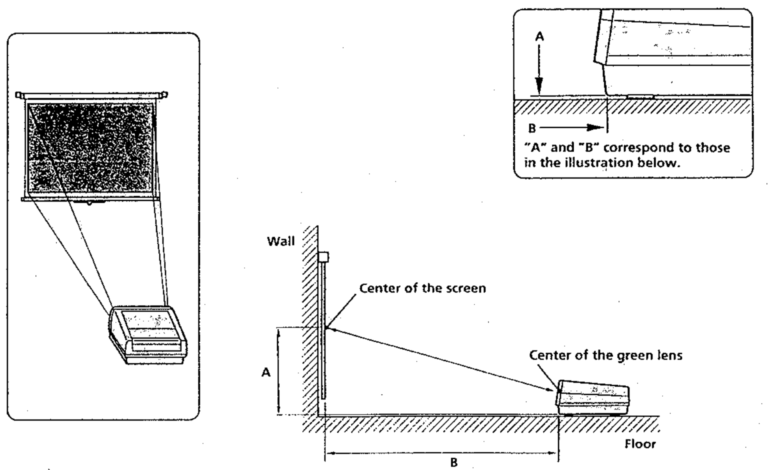
Press the TEST button. The cross-hair test pattern is displayed.
To restore the normal display, press the TEST button again.

1-6. INSTALLATION DIAGRAMS

Installation and preliminary adjustments should be carried out by qualified Sony personnel.

Using the Front Projection Screen

Installation 1 Floor installation using a flat screen

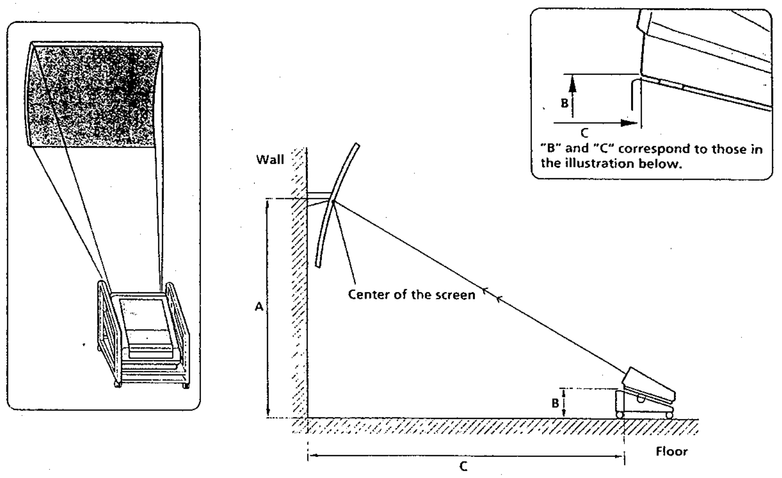

A
B
"A" and "B" correspond to those in the illustration below.
Wall
Center of the screen
A
Center of the green lens
Floor
B

Tolerance in length: ±1%

Screen size (inches)	Unit: mm (inches)	
	A	B
70	674 ($26^5/_8$)	2,363 ($93^1/_8$)
72	685 (27)	2,441 ($96^1/_8$)
80*	740 ($29^1/_4$)	2,681 ($105^5/_8$)
100**	873 ($34^3/_8$)	3,301 (130)
120***	1,006 ($39^5/_8$)	3,923 ($154^1/_2$)
150	1,214 ($47^7/_8$)	4,857 ($191^1/_4$)
180	1,414 ($55^3/_4$)	5,793 ($228^1/_8$)
200	1,544 ($60^7/_8$)	6,417 ($252^3/_4$)
250	1,884 ($74^1/_4$)	7,967 ($313^3/_4$)

* Sony screen VPS-80FH
** Sony screen VPS-100FH
*** Sony screen VPS-120FH

Installation 2 Floor installation using a curved screen

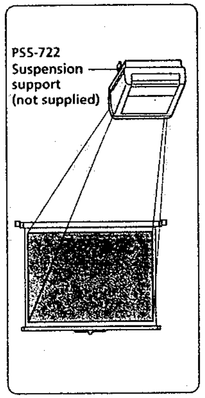

B
C
"B" and "C" correspond to those in the illustration below.
Wall
A
Center of the screen
B
Floor
C

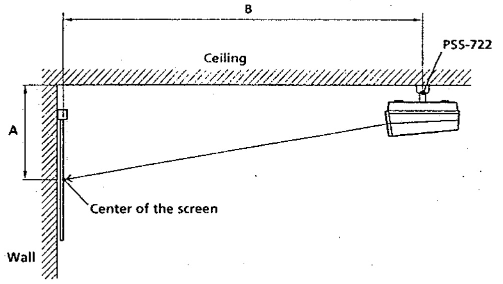
Tolerance in length: ±1%

Screen size (inches)	Unit: mm (inches)		
	A	B	C
72*	1,886 ($74^3/_8$)	537 ($21^1/_4$)	2,330 ($91^3/_4$)
100**	2,107 (83)	304 (12)	3,205 ($126^1/_4$)

* Sony screen VPS-72HG1
** Sony screen VPS-100HG1

Installation 3 Ceiling installation using a flat screen


PSS-722
Suspension
support
(not supplied)

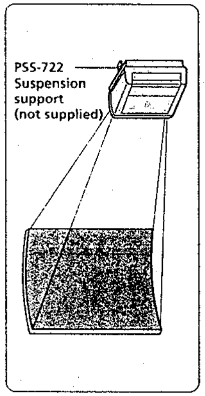

B
Ceiling
PSS-722
A
Center of the screen
Wall

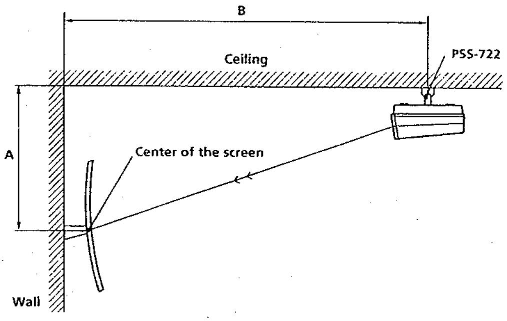
Tolerance in length: ±1%

Screen size (inches)	Unit: mm (inches)	
	A	B
70	813 ($32^{1}/_{8}$)	2,614 (103)
72	824 ($32^{1}/_{2}$)	2,692 (106)
80*	879 ($34^{5}/_{8}$)	2,932 ($114^{3}/_{4}$)
100**	1,012 ($39^{7}/_{8}$)	3,552 ($139^{7}/_{8}$)
120***	1,145 ($45^{1}/_{8}$)	4,170 ($164^{3}/_{8}$)
150	1,350 ($53^{1}/_{4}$)	5,108 ($201^{1}/_{8}$)
180	1,550 ($61^{1}/_{8}$)	6,044 (238)
200	1,680 ($66^{1}/_{4}$)	6,668 ($262^{5}/_{8}$)
250	2,020 ($79^{1}/_{4}$)	8,218 ($323^{5}/_{8}$)

* Sony screen VPS-80FH
** Sony screen VPS-100FH
*** Sony screen VPS-120FH

Installation 4 Ceiling installation using a curved screen


PSS-722
Suspension
support
(not supplied)

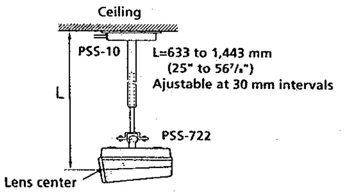

B
Ceiling
PSS-722
A
Center of the screen
Wall

Tolerance in length: ±1%

Screen size (inches)	Unit: mm (inches)	
	A	B
72 *	1,123 ($44^{1}/_{4}$)	2,772 ($109^{1}/_{4}$)
100 **	1,440 ($56^{3}/_{4}$)	3,713 ($146^{1}/_{4}$)

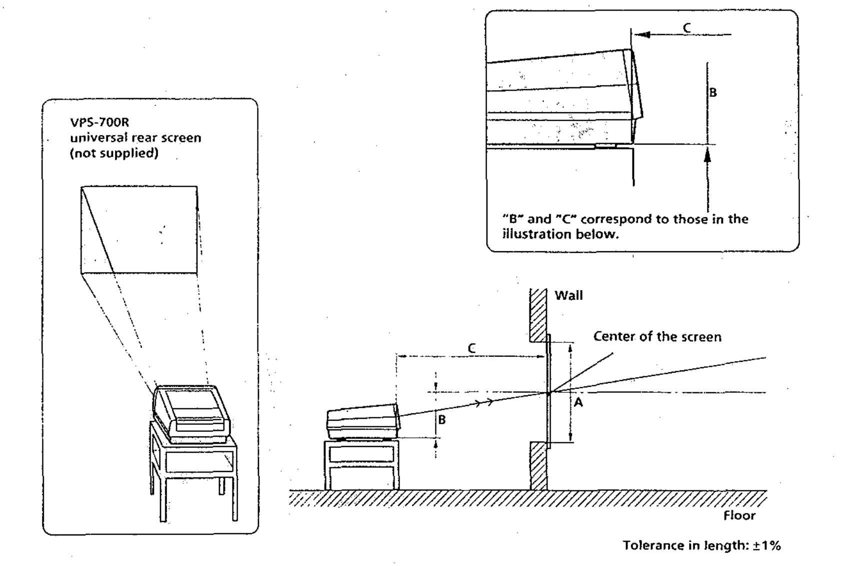
* Sony screen VPS-72HG1
** Sony screen VPS-100HG1

To adjust the distance between the ceiling and the projector, use the optional PSS-10 projector suspension support in combination with the PSS-722.


Ceiling
PSS-10
L
L=633 to 1,443 mm
(25" to 56⁷/₈")
Ajustable at 30 mm intervals
PSS-722
Lens center

Using the Rear Projection Screen

Installation 5 Level installation on the floor


VPS-700R
universal rear screen
(not supplied)
C
B
Wall
Center of the screen
C
B
A
Floor

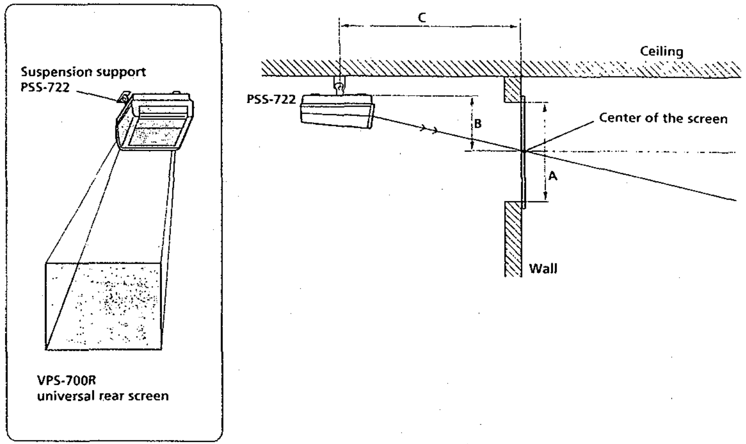
"B" and "C" correspond to those in the illustration below.

Tolerance in length: ±1%

Screen size (inches)	Length: mm (inches)		
	A	B	C
70*	1,067 ($42^{1}/_{8}$)	690 ($27^{1}/_{4}$)	2,363 ($93^{1}/_{8}$)
100	1,524 ($60^{1}/_{8}$)	889 (35)	3,301 (130)

* Sony screen VPS-700R

Installation 6 Level installation on the ceiling

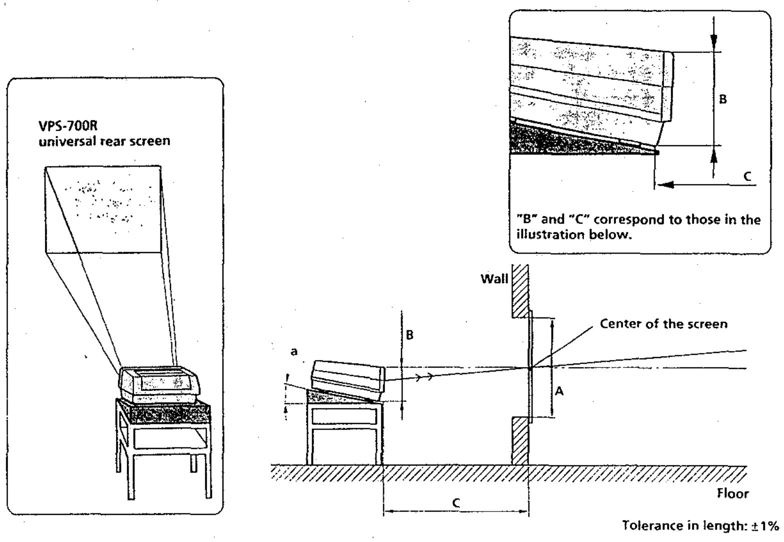

Suspension support
PSS-722
VPS-700R
universal rear screen
C
Ceiling
PSS-722
B
Center of the screen
A
Wall

Tolerance in length: ±1%

Screen size (inches)	Length: mm (inches)		
	A	B	C
70*	1,067 ($42^{1}/_{8}$)	674 ($26^{5}/_{8}$)	2,614 (103)
100	1,524 ($60^{1}/_{8}$)	873 ($34^{3}/_{8}$)	3,552 ($139^{7}/_{8}$)

* Sony screen VPS-700R

Installation 7 Level projection, floor installation


VPS-700R
universal rear screen
B
C
a
B
Wall
Center of the screen
A
Floor
C

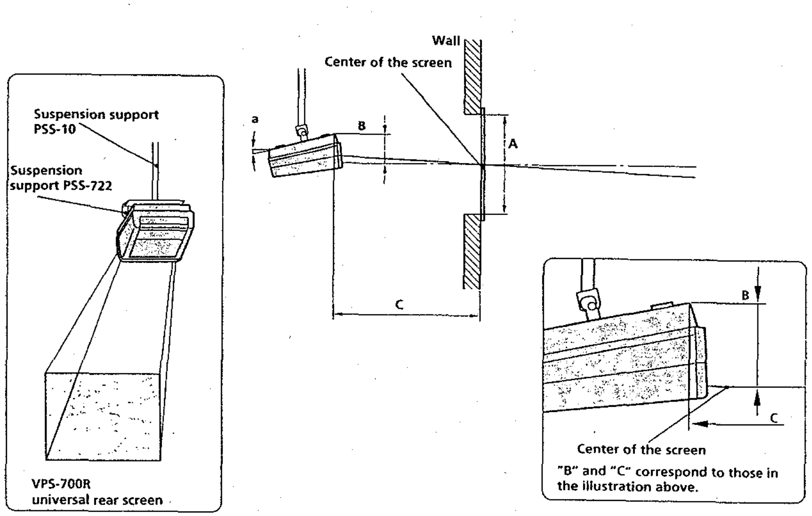
"B" and "C" correspond to those in the illustration below.

Tolerance in length: ±1%

Screen size (inches)	Length: mm (inches)			Angle (°)
	A	B	C	a
70*	1,067 ($42^1/_8$)	165 ($6^1/_2$)	2,439 ($96^1/_8$)	12
	1,067 ($42^1/_8$)	676 ($26^5/_8$)	2,433 ($95^7/_8$)	10
100	1,524 ($60^1/_8$)	167 ($6^5/_8$)	3,402 (134)	12
	1,524 ($60^1/_8$)	715 ($28^1/_4$)	3,402 (134)	10

* Sony screen VPS-700R

Installation 8 Level projection, ceiling installation


Suspension support
PSS-10
Suspension
support PSS-722
VPS-700R
universal rear screen
Wall
Center of the screen
a
B
A
C
B
C
Center of the screen

"B" and "C" correspond to those in the illustration above.

Tolerance in length: ±1%

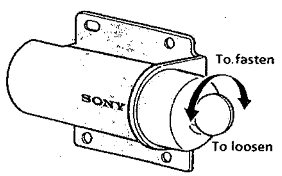
Screen size (inches)	Length: mm (inches)			Angle (°)
	A	B	C	b
70*	1,067 ($42^1/_8$)	165 ($6^1/_2$)	2,439 ($96^1/_8$)	12
	1,067 ($42^1/_8$)	676 ($26^5/_8$)	2,433 ($95^7/_8$)	10
100	1,524 ($60^1/_8$)	167 ($6^5/_8$)	3,402 (134)	12
	1,524 ($60^1/_8$)	715 ($28^1/_4$)	3,402 (134)	10

* Sony screen VPS-700R

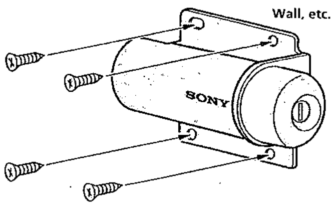
Installing the Remote Control Receiver

For wireless remote control operation, install the supplied remote control receiver within the operable range (see page 11) with the SONY mark facing toward the Remote Commander.

1 **Turn the mounting bracket fastening screw counterclockwise to loosen the bracket, move the bracket to the appropriate position and fasten it by turning the screw clockwise.**


To fasten
To loosen
SONY

2 **Secure the mounting bracket using the supplied screws.**

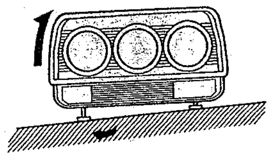

Wall, etc.
SONY

Note
Please consult qualified Sony personnel if the supplied screws do not fit your installation location.

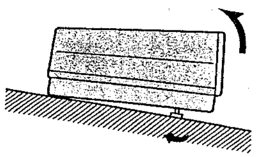
Using the Adjusters

You can adjust the horizontal tilt and the angle of the projector by turning the adjusters.
The adjusters are set to the shortest length at the factory.

To adjust the horizontal tilt
Turn either adjuster to obtain horizontal balance.



To adjust the angle
Turn both adjusters to adjust the angle.

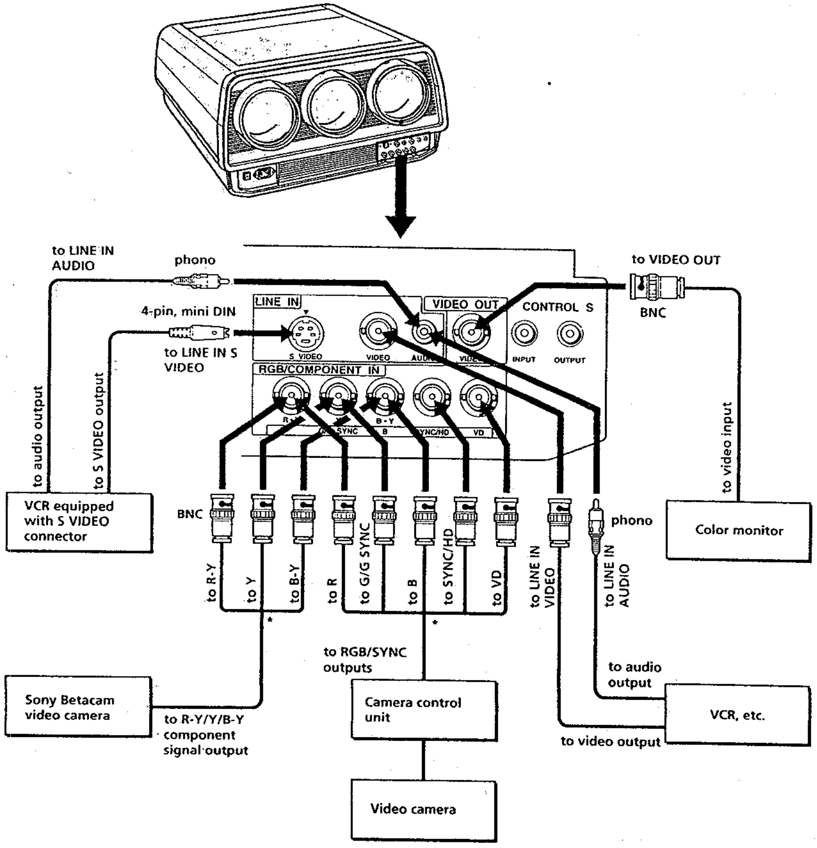


1-7. SYSTEM CONNECTIONS

Notes on connections

- First make sure that the power to each piece of equipment is turned off.
- Use suitable connecting cables according to the equipment to be connected.
- The cable connectors should be fully inserted into the connectors of the equipment.
- To disconnect the cable, pull it out by grasping the plug. Never pull the cable itself.
- Refer to the instruction manual of the equipment to be connected.

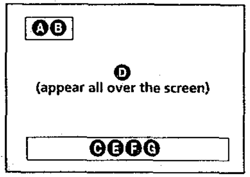
Connecting to the Projector


to LINE IN AUDIO
phono
4-pin, mini DIN
to LINE IN S VIDEO
LINE IN
S VIDEO
VIDEO
AUDIO
VIDEO OUT
CONTROL S
INPUT
OUTPUT
RGB/COMPONENT IN
R-Y
G/SYNC
B-Y
B
SYNC/HD
VD
to VIDEO OUT
BNC
to audio output
to S VIDEO output
VCR equipped with S VIDEO connector
BNC
to R-Y
to Y
to B-Y
to R
to G/G SYNC
to B
to SYNC/HD
to VD
to LINE IN VIDEO
to LINE IN AUDIO
phono
to video input
Color monitor
to RGB/SYNC outputs
to audio output
VCR, etc.
to video output
Sony Betacam video camera
to R-Y/Y/B-Y component signal output
Camera control unit
Video camera
*
*

* Connections using the RGB/COMPONENT IN connectors are for VPH-1044Q/1044QM only.

1-8. LIST OF THE MESSAGES

Use the list below to check the meaning of the messages displayed on the screen.
The list is divided into sections according to the location where the message appears. Check the location first, then refer to the corresponding letter for the section to find the message.



A Input channel

VIDEO	Input from LINE IN VIDEO
S VIDEO	Input from LINE IN S VIDEO
RGB	Input from RGB IN
COMPONENT	Input from COMPONENT IN
NO INPUT	No signal is input

B Input color source

NTSC$_{3.58}$	The NTSC$_{3.58}$ signal is input.
NTSC$_{4.43}$	The NTSC$_{4.43}$ signal is input.
PAL	The PAL signal is input.
SECAM	The SECAM signal is input.
B & W	Black and white signal is input.

C PICTURE/VOLUME CONTROL data

CONTR	Contrast
HUE	Hue
COLOR	Color
BRIGHT	Brightness
SHARP	Sharpness
VOL	Volume
MEMORY 1/2/3/STD	Picture adjustment memory position 1, 2, 3 or standard

D PAGE

USER PRESET

STATUS: ON/OFF	The on-screen display is displayed or cut.
PIC MUTING: ON/OFF	The picture is cut or displayed.
AUDIO MUTING: ON/OFF	The sound is muted or not.

PICTURE CONTROL

MEMORY: 1/2/3/STD	Picture adjustment memory position 1, 2, 3 or standard
CONTR	Contrast
HUE	Hue
COLOR	Color
BRIGHT	Brightness
SHARP	Sharpness

SYSTEM PRESET

D PICTURE: ON/OFF	The Dynamic picture feature functions or not.
Y DELAY: +/ –/STD	Color shifts left or right, or does not shift.
CENT ADJ: EXT, INT	Centering adjustment is performed with an external test signal or a built-in cross-hair test pattern.
RGB/COMPONENT: RGB/COMPONENT	Input signal from the RGB/COMPONENT IN connectors is RGB or component.

E Operation

SELECT: [↑],[↓]	Press ↑ or ↓ to select.
ADJ: [←],[→]	Press ← or → to adjust.
SET: [←],[→]	Press ← or → to set.
NEXT: [PAGE]	Press the PAGE button to change to the next page display.
EXIT: [PAGE]	Press the PAGE button to exit the page display mode.

F Adjustment/adjustment data

R CENT	Red centering adjustment mode
B CENT	Blue centering adjustment mode
H: xxx	Horizontal adjustment level (xxx=MIN, –126 – +126, MAX)
V:xxx	Vertical adjustment level (xxx=MIN, –126 – +126, MAX)

G Caution, message

Not Applicable!	The button does not function with the current condition.
PIC MUTING	The PIC MUTING button is pressed.
AUDIO MUTING	The AUDIO MUTING button is pressed.

1-9. BEFORE INSTALLING

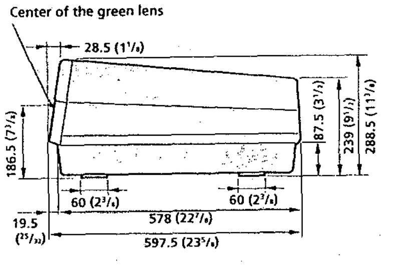
Illumination

To obtain a clear picture, the screen should not be exposed to illumination or sunlight directly from the front.

- Ceiling mounted spot lighting is recommended. Use a construction over lightscattering illumination such as fluorescent lamps.
- Cover the windows that face the screen with opaque draperies.
- It is desirable to install the projector in a room whose floor and walls are not of light-reflecting material. If the floor and walls are of reflecting material, it would be desirable to change to a dark carpet and wall paper.

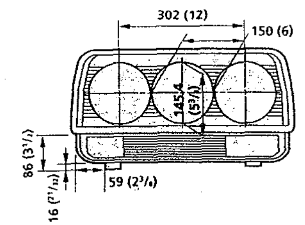
Caution
Take care not to touch portions of the projector other than those indicated in this manual because dangerous high voltages are present. To change the polarity, first turn the MAIN POWER switch off.

Side


Center of the green lens
28.5 (1 1/8)
186.5 (7 3/8)
87.5 (3 1/2)
239 (9 1/2)
288.5 (11 3/8)
60 (2 3/8)
60 (2 3/8)
19.5 (25/32)
578 (22 7/8)
597.5 (23 5/8)

Unit: mm (inches)

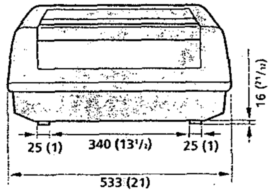
Front


302 (12)
150 (6)
145.4 (5 3/4)
86 (3 3/8)
16 (21/32)
59 (2 3/8)

Unit: mm (inches)

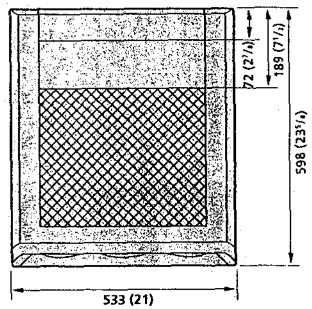
1-10. PROJECTOR DIMENSIONS

Rear


16 (21/32)
25 (1)
340 (13 1/2)
25 (1)
533 (21)

Unit: mm (inches)

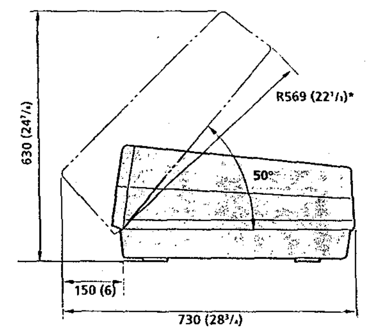
Top


72 (2 7/8)
189 (7 1/2)
598 (23 5/8)
533 (21)

Unit: mm (inches)

Necessary Clearance for Maintenance

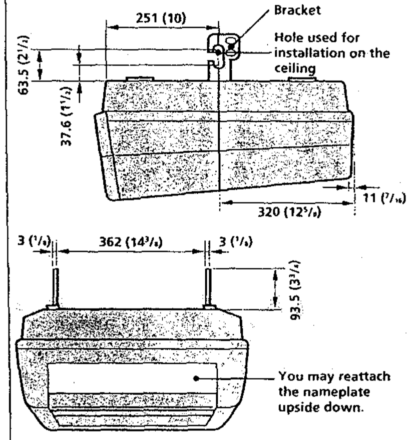
When you install the projector, be sure to provide the clearance around it as shown for maintenance service.


630 (24 7/8)
R569 (22 3/8)*
50°
150 (6)
730 (28 3/4)

*R: Radius
Unit: mm (inches)

Necessary Dimensions for Ceiling Installation

Raise the brackets at the bottom.


251 (10)
Bracket
Hole used for installation on the ceiling
63.5 (2 1/2)
37.6 (1 1/2)
11 (7/16)
320 (12 5/8)
3 (1/8)
362 (14 3/8)
3 (1/8)
93.5 (3 3/4)
You may reattach the nameplate upside down.

Unit: mm (inches)

1-11. INSTALLATION PROCEDURES

This projector is adjusted at the factory for projection on a 100-inch front projection type screen when the projector is installed on the floor/desk. If you install the projector under other conditions, modifications of some parts in the projector are required. Therefore, installation procedures vary depending on the screen size, installation method and type of screen.

Floor Installation Using Front Projection Type Screen

Select the screen size.

- **70–149 inches** → **Install the screen and the projector in accordance with the standard measurements.**
- **150–250 inches** → **Change the CRT spacers. (Page 16)** → **Adjust the lens spacers. (Page 19)** → **Install the screen and the projector in accordance with the standard measurements.**

Install the screen and the projector in accordance with the standard measurements.
- Using a flat screen (page 6)
- Using a curved screen (page 7)

Adjust the lens focus. (Page 21)

Adjust the registration. (Page 22)

Ceiling Installation Using Front Projection Type Screen

Select the screen size.

- **70–149 inches** → **Change the polarity. (Page 20)**
- **150–250 inches** → **Change the CRT spacers. (Page 16)** → **Adjust the lens spacers. (Page 19)** → **Change the polarity. (Page 20)**

Change the polarity. (Page 20)

Install the screen and the projector in accordance with the standard measurements.
- Using a flat screen (page 8)
- Using a curved screen (page 9)

Adjust the lens focus. (Page 21)

Adjust the registration. (Page 22)

Floor or Ceiling Installation Using Rear Projection Type Screen

Determine the angle of optical axis.

- **12°** → **Change the polarity. (Page 20)**
- **0° or 2°** → **Change the CRT spacers. (Page 17)** → **Change the polarity. (Page 20)**

Change the polarity. (Page 20)

Install the screen and the projector in accordance with the standard measurements.
- Floor installation (pages 11, 13)
- Ceiling installation (pages 12, 14)

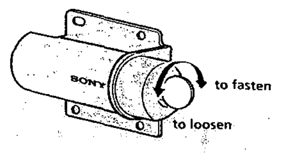
Adjust the lens focus. (Page 21)

Adjust the registration. (Page 22)

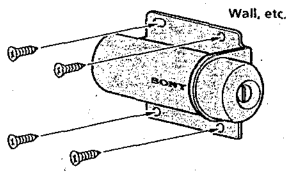
Installating the Remote Control Receiver

For wireless remote control operation, install the supplied remote control receiver within the operable range with the SONY mark facing toward the Remote Commander.

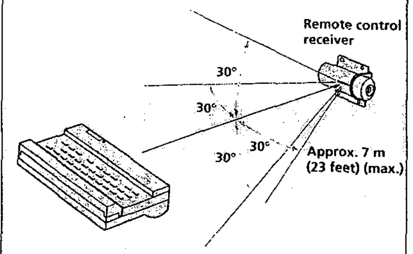
1 Turn the mounting bracket fastening screw counterclockwise to loosen the bracket, move the bracket to the appropriate position and fasten it by turning the screw clockwide.



2 Secure the mounting bracket using the supplied screws.



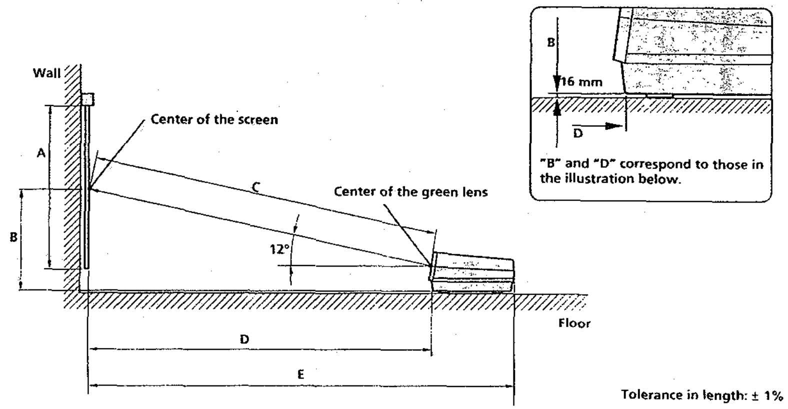
Operable range of the Remote Commander



1-12. INSTALLATION DIAGRAMS

Floor Installation Using Front Projection Flat Screen

Be sure that the projector is parallel to the floor.



"B" and "D" correspond to those in the illustration below.

Tolerance in length: ± 1%

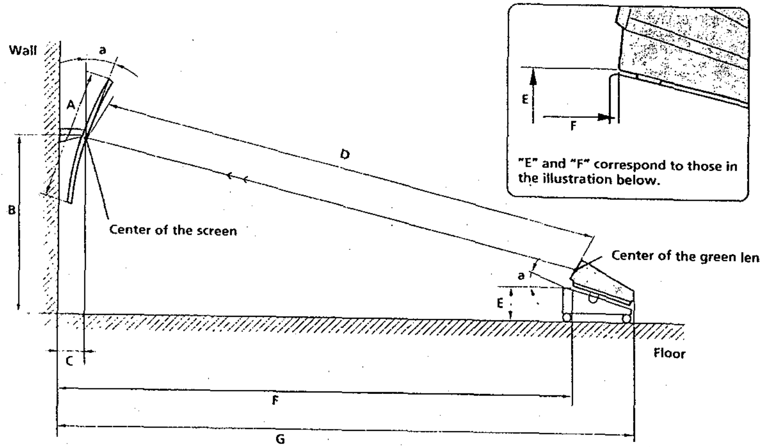
Screen size (inches)	Length mm (inches)				
	A	B	C	D	E
70	1,067 ($42^{1}/_{8}$)	674 ($26^{5}/_{8}$)	2,406 ($94^{3}/_{4}$)	2,363 ($93^{1}/_{8}$)	2,934 ($115^{5}/_{8}$)
72	1,097 ($43^{1}/_{4}$)	685 (27)	2,480 ($97^{3}/_{4}$)	2,441 ($96^{1}/_{8}$)	3,012 ($118^{5}/_{8}$)
80*	1,219 (48)	740 ($29^{1}/_{4}$)	2,734 ($107^{3}/_{4}$)	2,681 ($105^{5}/_{8}$)	3,252 ($128^{1}/_{8}$)
100**	1,524 ($60^{1}/_{8}$)	873 ($34^{3}/_{8}$)	3,368 ($132^{5}/_{8}$)	3,301 (130)	3,872 ($152^{1}/_{2}$)
120***	1,829 ($72^{1}/_{8}$)	1,006 ($39^{5}/_{8}$)	4,004 ($157^{11}/_{16}$)	3,923 ($154^{1}/_{2}$)	4,494 (177)
150	2,286 ($90^{1}/_{8}$)	1,214 ($47^{7}/_{8}$)	4,961 ($195^{3}/_{8}$)	4,857 ($191^{1}/_{4}$)	5,428 ($213^{3}/_{4}$)
180	2,743 ($108^{1}/_{8}$)	1,414 ($55^{3}/_{4}$)	5,918 ($231^{1}/_{8}$)	5,793 ($228^{1}/_{8}$)	6,364 ($250^{5}/_{8}$)
200	3,048 ($120^{1}/_{16}$)	1,544 ($60^{7}/_{8}$)	6,555 ($258^{1}/_{8}$)	6,417 ($252^{3}/_{4}$)	6,988 ($275^{1}/_{4}$)
250	3,810 ($150^{1}/_{8}$)	1,884 ($74^{1}/_{4}$)	8,142 ($320^{5}/_{8}$)	7,967 ($313^{3}/_{4}$)	8,538 ($336^{1}/_{4}$)

* Sony screen VPS-80FH
** Sony screen VPS-100FH
*** Sony screen VPS-120FH

Necessary modifications of parts (only for use of the 150- to 250-inch screens)

- CRT spacer change (page 16)
- Lens spacer adjustment (page 19)

Floor Installation Using Front Projection Curved Screen



"E" and "F" correspond to those in the illustration below.

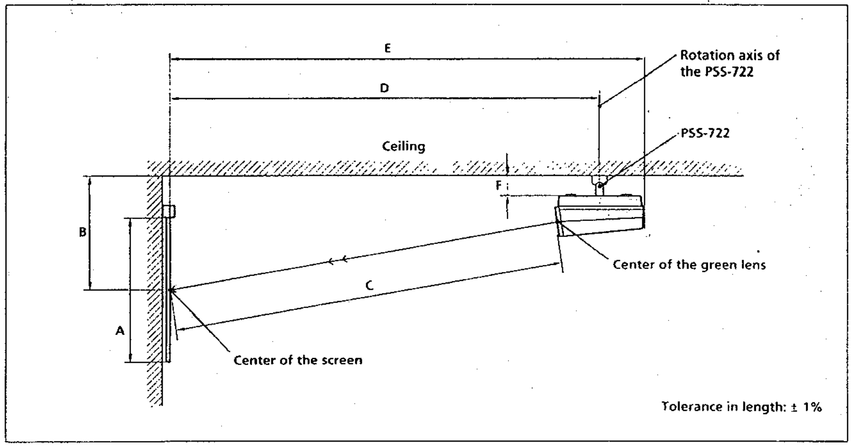
Tolerance in length: ± 1%

Screen size (inches)	Length mm (inches)							Angle (°)
	A	B	C	D	E	F	G	a
72*	1,125 ($44^{3}/_{8}$)	1,886 ($74^{3}/_{8}$)	185 ($7^{3}/_{8}$)	2,487 (98)	537 ($2^{1}/_{8}$)	2,330 ($91^{3}/_{4}$)	2,931 ($114^{3}/_{4}$)	16.5
100**	1,600 (63)	2,107 (83)	305 ($12^{1}/_{8}$)	3,368 ($132^{5}/_{8}$)	304 (12)	3,205 ($126^{1}/_{4}$)	3,806 ($149^{7}/_{8}$)	17.0

* Sony screen VPS-72HG1
** Sony screen VPS-100HG1

Ceiling Installation Using Front Projection Flat Screen

Be sure that the projector is parallel to the ceiling. Use the Sony PSS-722 projector suspension support.


E
D
Rotation axis of the PSS-722
Ceiling
PSS-722
F
B
C
Center of the green lens
A
Center of the screen

Tolerance in length: ± 1%

Screen size (inches)	Length mm (inches)					
	A	B	C	D	E	F
70	1,067 ($42^{1}/_{8}$)	813 ($32^{1}/_{8}$)	2,406 ($94^{3}/_{4}$)	2,614 (103)	2,934 ($115^{5}/_{8}$)	139 ($5^{1}/_{2}$)
72	1,097 ($43^{1}/_{4}$)	824 ($32^{1}/_{2}$)	2,480 ($97^{3}/_{4}$)	2,692 (106)	3,012 ($118^{5}/_{8}$)	139 ($5^{1}/_{2}$)
80*	1,219 (48)	879 ($34^{5}/_{8}$)	2,734 ($107^{3}/_{4}$)	2,932 ($114^{3}/_{4}$)	3,252 ($128^{1}/_{8}$)	139 ($5^{1}/_{2}$)
100**	1,524 ($60^{1}/_{8}$)	1,012 ($39^{7}/_{8}$)	3,368 ($132^{5}/_{8}$)	3,552 ($139^{7}/_{8}$)	3,872 ($152^{1}/_{2}$)	139 ($5^{1}/_{2}$)
120***	1,829 ($72^{1}/_{8}$)	1,145 ($45^{1}/_{8}$)	4,004 ($157^{11}/_{16}$)	4,174 ($164^{3}/_{8}$)	4,494 (177)	139 ($5^{1}/_{2}$)
150	2,286 ($90^{1}/_{8}$)	1,350 ($53^{1}/_{4}$)	4,961 ($195^{3}/_{8}$)	5,108 ($201^{1}/_{8}$)	5,428 ($213^{3}/_{4}$)	136 ($5^{3}/_{8}$)
180	2,743 ($108^{1}/_{8}$)	1,550 ($61^{1}/_{8}$)	5,918 ($231^{1}/_{8}$)	6,044 (238)	6,364 ($250^{5}/_{8}$)	136 ($5^{3}/_{8}$)
200	3,048 ($120^{1}/_{16}$)	1,680 ($66^{1}/_{4}$)	6,555 ($258^{1}/_{8}$)	6,668 ($262^{5}/_{8}$)	6,988 ($275^{1}/_{4}$)	136 ($5^{3}/_{8}$)
250	3,810 ($150^{1}/_{8}$)	2,020 ($79^{9}/_{16}$)	8,142 ($320^{5}/_{8}$)	8,218 ($323^{5}/_{8}$)	8,538 ($336^{1}/_{4}$)	136 ($5^{3}/_{8}$)

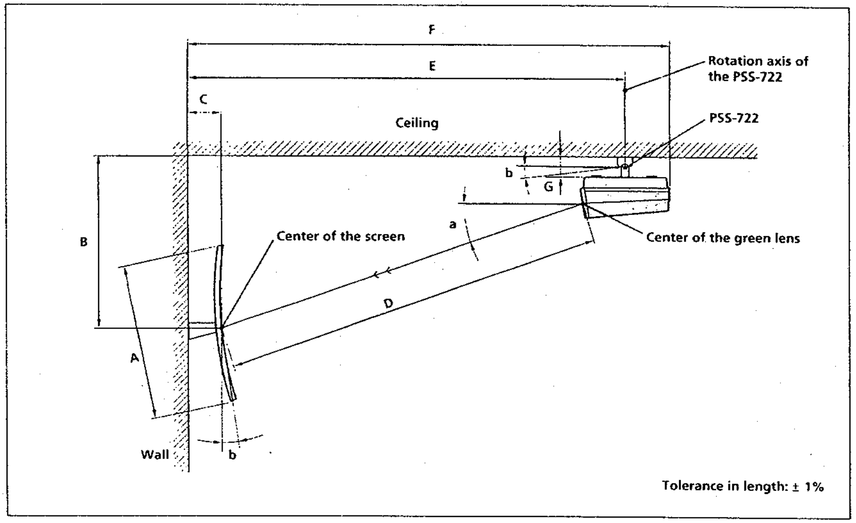
* Sony screen VPS-80FH
** Sony screen VPS-100FH
*** Sony screen VPS-120FH

Necessary modifications of parts

- CRT spacer change (only for use of 150- to 250-inch screens)(page 16)
- Lens spacer adjustment (only for use of 150- to 250-inch screens)(page 19)
- Horizontal and vertical deflection changes (page 20)

Ceiling Installation Using Front Projection Curved Screen

Use the Sony PSS-722 projector suspension support.


F
E
C
Rotation axis of the PSS-722
Ceiling
PSS-722
b
G
B
a
Center of the screen
Center of the green lens
D
A
Wall
b

Tolerance in length: ± 1%

Screen size (inches)	Length mm (inches)							Angle (°)	
	A	B	C	D	E	F	G	a	b
72*	1,125 ($44^{3}/_{8}$)	1,123 ($44^{1}/_{4}$)	185 ($7^{3}/_{8}$)	2,480 ($97^{3}/_{4}$)	2,772 ($109^{1}/_{4}$)	3,107 ($122^{3}/_{8}$)	166 ($6^{5}/_{8}$)	18.5	6.5
100**	1,600 (63)	1,440 ($56^{3}/_{4}$)	305 ($12^{1}/_{8}$)	3,368 ($132^{5}/_{8}$)	3,713 ($146^{1}/_{4}$)	4,041 ($159^{1}/_{8}$)	252 (10)	19.0	7.0

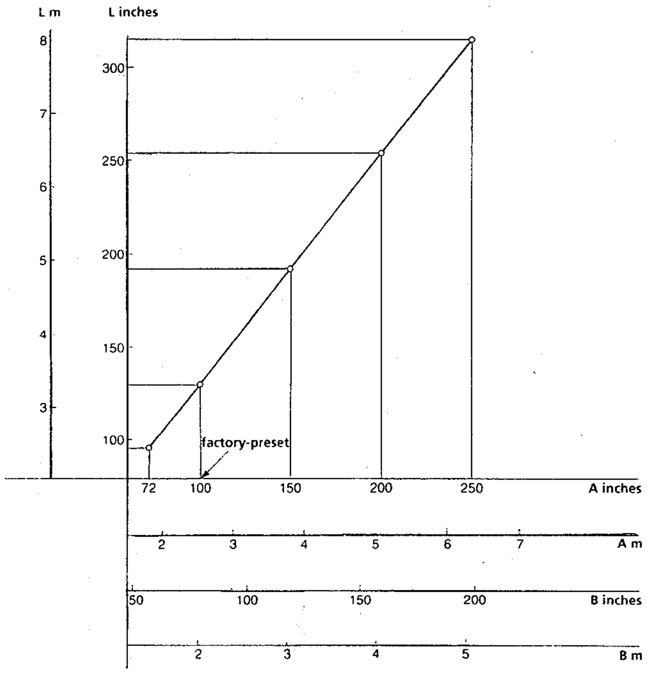
* Sony screen VPS-72HG1
** Sony screen VPS-100HG1

Necessary modifications of parts

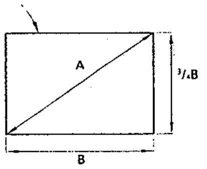
- Horizontal and vertical deflection changes (page 20)

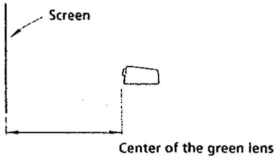
When the Screen Size is Not Described in the Diagrams

When using the front projection screen for floor and ceiling installations, use the following graph to decide the distance between the screen and the projector (L).



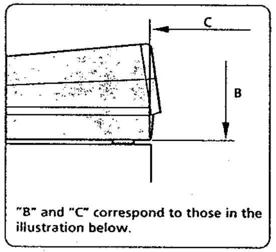
Viewable area of the screeen



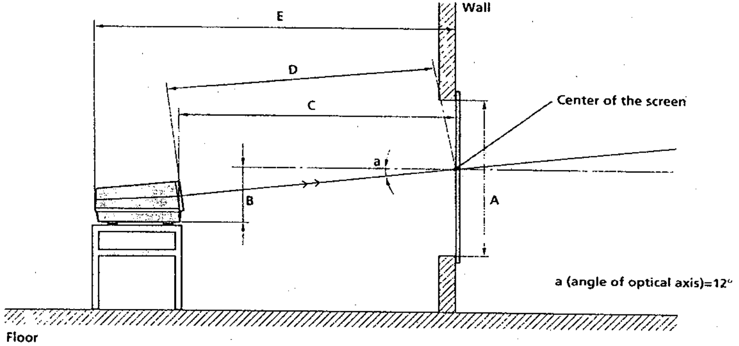

Screen
Center of the green lens

Installation Using Rear Projection Screen

Level installation on the floor (when the angle of optical axis is 12°)



"B" and "C" correspond to those in the illustration below.


Wall
E
D
C
Center of the screen
a
B
A
a (angle of optical axis)=12°
Floor

Tolerance in length: ± 1%

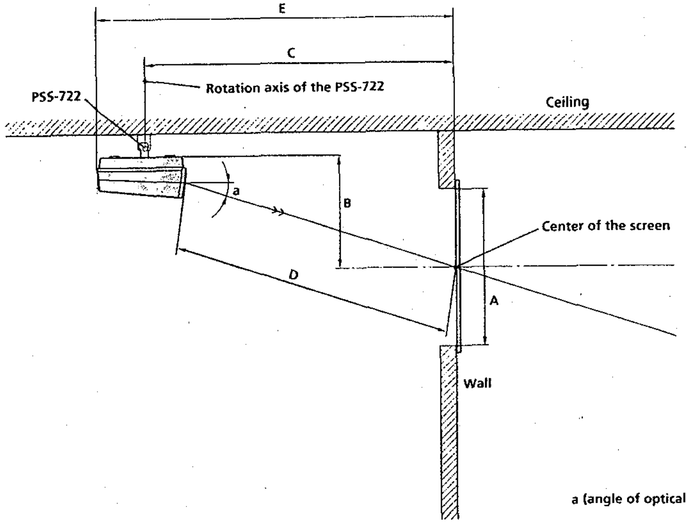
Screen size (inches)	Length mm (inches)				
	A	B	C	D	E
70 *	1,067 ($42\frac{1}{8}$)	690 ($27\frac{1}{4}$)	2,363 ($93\frac{1}{8}$)	2,406 ($94\frac{3}{4}$)	2,934 ($115\frac{5}{8}$)
100	1,524 ($60\frac{1}{8}$)	889 (35)	3,301 (130)	3,368 ($132\frac{5}{8}$)	3,872 ($152\frac{1}{2}$)

* Sony screen VPS-700R

Necessary modifications of parts

- Horizontal deflection change (page 20)

Level installation on the ceiling (when the angle of optical axis is 12°)


E
C
PSS-722
Rotation axis of the PSS-722
Ceiling
a
B
Center of the screen
D
A
Wall

a (angle of optical axis)=12°

Tolerance in length: ± 1%

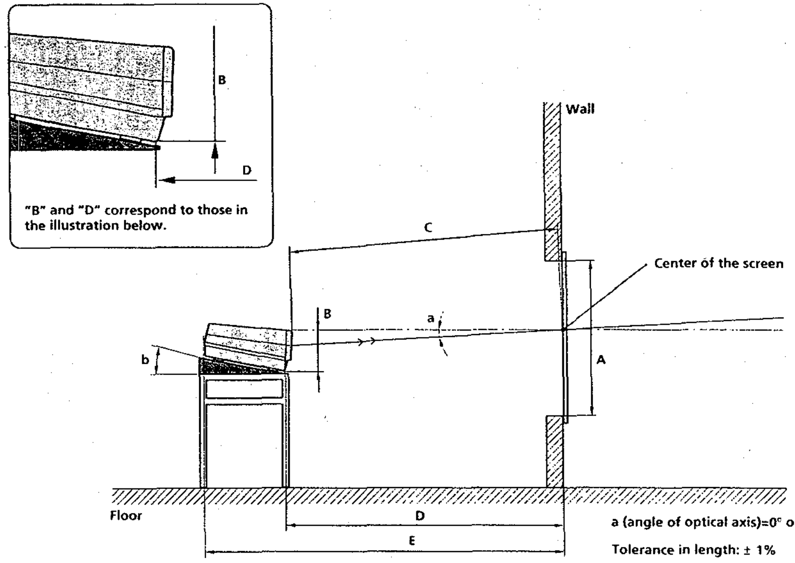
Screen size (inches)	Length mm (inches)				
	A	B	C	D	E
70 *	1,067 ($42^1/_8$)	674 ($26^5/_8$)	2,614 (103)	2,406 ($94^3/_4$)	2,934 ($115^5/_8$)
100	1,524 ($60^1/_8$)	873 ($34^3/_8$)	3,552 ($139^7/_8$)	3,368 ($132^5/_8$)	3,872 ($152^1/_2$)

* Sony screen VPS-700R

Necessary modifications of parts

- Vertical deflection change (page 20)

Level projection, floor installation (when the angle of optical axis is 0° or 2°)


B
D
"B" and "D" correspond to those in the illustration below.
Wall
C
Center of the screen
B
a
b
A
Floor
D
E

a (angle of optical axis)=0° or 2°

Tolerance in length: ± 1%

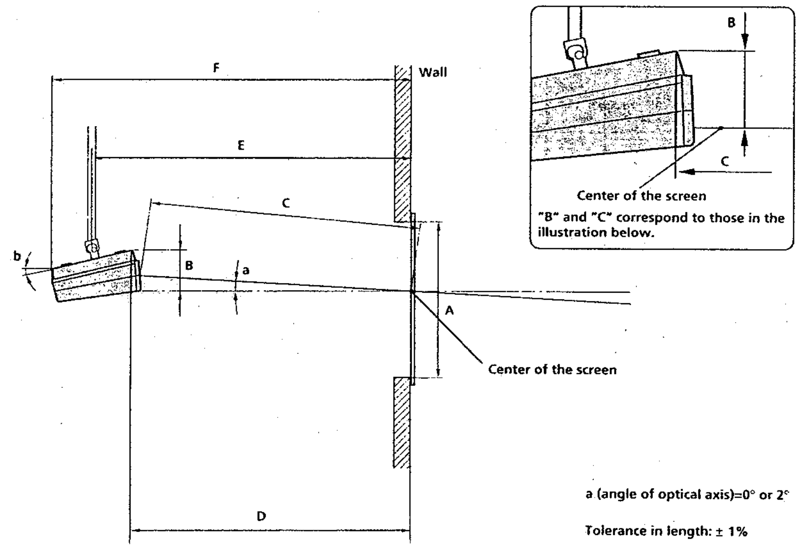
Screen size (inches)	Length mm (inches)					Angle (°)	
	A	B	C	D	E	a	b
70 *	1,067 ($42^1/_8$)	165 ($6^1/_2$)	2,397 ($93^3/_4$)	2,439 ($96^1/_8$)	2,982 ($116^3/_4$)	0	12
	1,067 ($42^1/_8$)	676 ($26^5/_8$)	2,450 ($95^3/_4$)	2,433 ($95^7/_8$)	2,982 ($116^3/_4$)	2	10
100	1,524 ($60^1/_8$)	167 ($6^5/_8$)	3,368 ($132^5/_8$)	3,402 (134)	3,954 ($155^3/_4$)	0	12
	1,524 ($60^1/_8$)	715 ($28^1/_4$)	3,441 ($135^1/_2$)	3,402 (134)	3,951 ($155^5/_8$)	2	10

* Sony screen VPS-700R

Necessary modifications of parts

- CRT spacer change (page 17)
- Horizontal deflection change (page 20)

Level projection, ceiling installation (when the angle of optical axis is 0° or 2°)



Center of the screen
"B" and "C" correspond to those in the illustration below.

a (angle of optical axis)=0° or 2°

Tolerance in length: ± 1%

Screen size (inches)	Length mm (inches)						Angle (°)	
	A	B	C	D	E	F	a	b
70*	1,067 (42 1/8)	165 (6 1/2)	2,397 (94 1/2)	2,439 (96 1/8)	2,698 (106 1/4)	2,982 (116 3/4)	0	12
	1,067 (42 1/8)	676 (26 5/8)	2,450 (96 1/2)	2,433 (95 7/8)	2,691 (106)	2,982 (116 3/4)	2	10
100	1,524 (60 1/8)	167 (6 5/8)	3,368 (132 5/8)	3,402 (134)	3,669 (144 1/2)	3,954 (155 3/4)	0	12
	1,524 (60 1/8)	715 (28 1/4)	3,441 (135 1/2)	3,402 (134)	3,661 (144 1/4)	3,951 (155 5/8)	2	10

* Sony screen VPS-700R

Necessary modifications of parts

- CRT spacer change (page 17)
- Vertical deflection change (page 20)

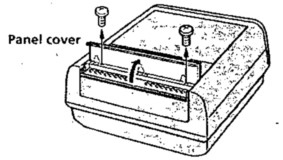
1-13. MODIFICATIONS OF PARTS

When modifying certain parts in the projector, such as changing polarity, open the top panel, remove the cabinet, or detaching the lens block.

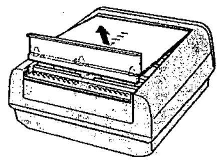
Opening the Top Panel

Use a medium size Phillips head screwdriver.

1 Open the control panel cover and remove the two screws.

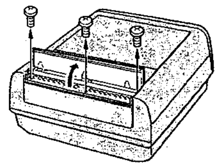


2 Pull the top panel slightly toward you and remove it.

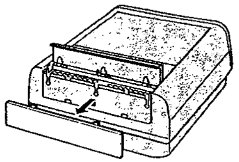


Removing the Cabinet

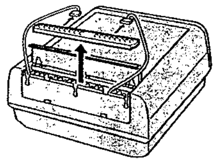
1 Open the control panel cover and remove the three screws on the control panel.



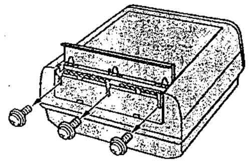
2 Slide the nameplate upward and pull it toward you to remove.



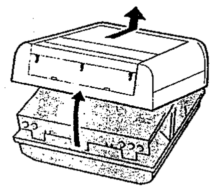
3 Remove the two connectors from the control panel and remove the control panel.



4 Remove the three screws.



5 Raise the cabinet and slide it away from you to remove.



To reinstall the cabinet

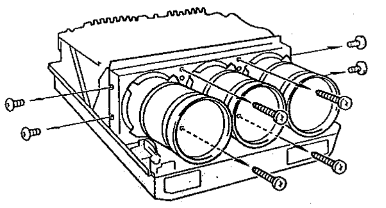
Caution
Make sure that the cables inside the projector are not caught when replacing the cabinet or the control panel.

1 Replace the cabinet.
2 Tighten the three screws on the nameplate attachment portion.
3 Connect the two connectors to the control panel, then replace the control panel.
4 Insert the nameplate.
5 Tighten the three screws on the control panel.

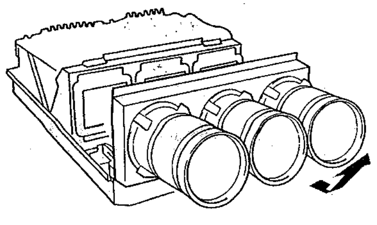
Detaching the Lens Block

1 Remove the cabinet.

2 Remove the 4 screws from the sides and the 4 screws from the lens base of the projector.



3 Pull the lens block out toward you.



Changing the CRT Spacer

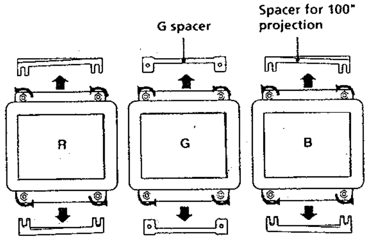
To change the CRT spacers for 150- to 250-inch projection

Use an 8 mm nutdriver.

1 Remove the cabinet. (See "Removing the cabinet".)

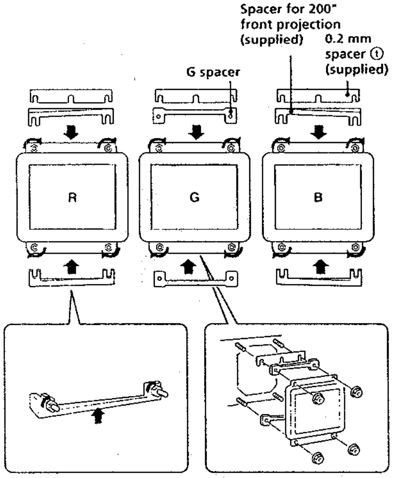
2 Detach the lens block. (See "Detaching the lens block".)

3 Loosen the four nuts and remove the two spacers from the top and the bottom of each CRT.



4 Insert the supplied spacers for 200" front projection, 0.2 mm spacers ① and G spacers as follows:

Red and blue CRTs: A spacer for 200" and a 0.2 mm spacer for the top, a spacer for 200" for the bottom Insert the spacer for 200" front projection with the thinner end toward the center CRT.
Green CRT: The G spacer removed in step 3 and a 0.2 mm spacer for the top, the G spacer removed in step 3 for the bottom


Spacer for 200" front projection (supplied)
0.2 mm spacer ① (supplied)
G spacer
R
G
B

5 Tighten the four nuts of each CRT securely for accurate lens angles.

6 Reinstall the lens block, the cabinet and the top panel.

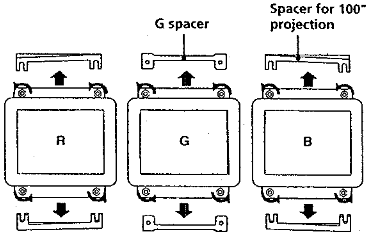
To change the CRT spacers for rear projection

Use an 8 mm nutdriver.

1 Remove the cabinet. (See "Removing the cabinet".)

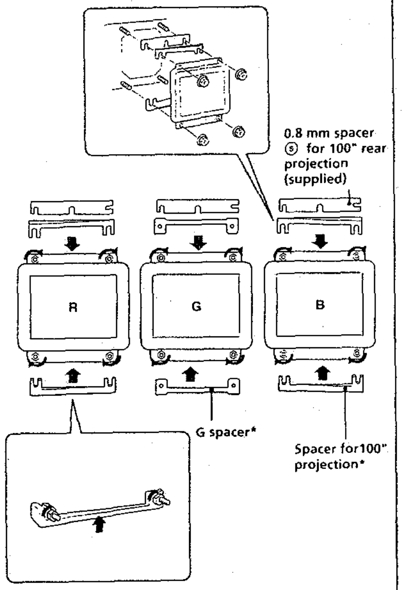
2 Detach the lens block. (See "Detaching the lens block".)

3 Loosen the four nuts and remove the two spacers from the top and the bottom of each CRT.



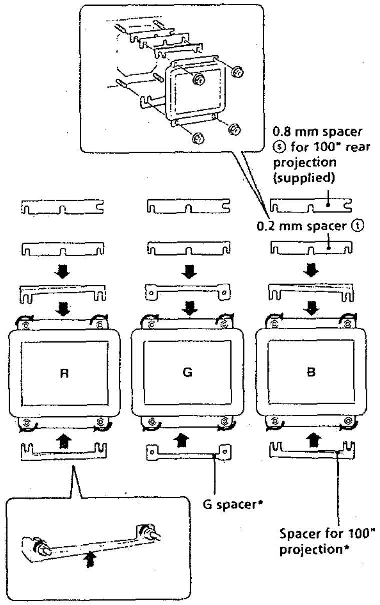
4 Insert the supplied 0.8 mm spacers Ⓢ for 100" rear projection, 0.2 mm spacers Ⓘ, the spacers for 100" projection and G spacers as follows:

When the angle of optical axis is 0°
Blue and red CRTs: A 0.8 mm spacer Ⓢ and the spacer for 100" removed in step 3 for the top, the spacer for 100" removed in step 3 for the bottom
Green CRT: A 0.8 mm spacer Ⓢ and the G spacer removed in step 3 for the top, the G spacer for the bottom


0.8 mm spacer
Ⓢ for 100" rear
projection
(supplied)
R
G
B
G spacer*
Spacer for100"
projection*

* Spacers removed in step 3

When the angle of optical axis is 2°
Red and blue CRTs: A 0.8 mm spacer Ⓢ, a 0.2 mm spacer Ⓘ and the spacer for 100" removed in step 3 for the top, the spacer for 100" removed in step 3 for the bottom
Green CRT: A 0.8 mm spacer Ⓢ, 0.2 mm spacer Ⓘ and the G spacer removed in step 3 for the top, the G spacer removed in step 3 for the bottom


0.8 mm spacer
Ⓢ for 100" rear
projection
(supplied)
0.2 mm spacer Ⓘ
R
G
B
G spacer*
Spacer for 100"
projection*

* Spacers removed in step 3

5 Tighten the four nuts of each CRT securely for accurate lens angles.

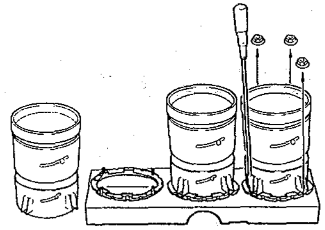
6 Reinstall the lens block, the cabinet and the top panel.

Adjusting the Lens Spacer for 150- to 250-inch Projection

1 Remove the cabinet.

2 Detach the lens block.

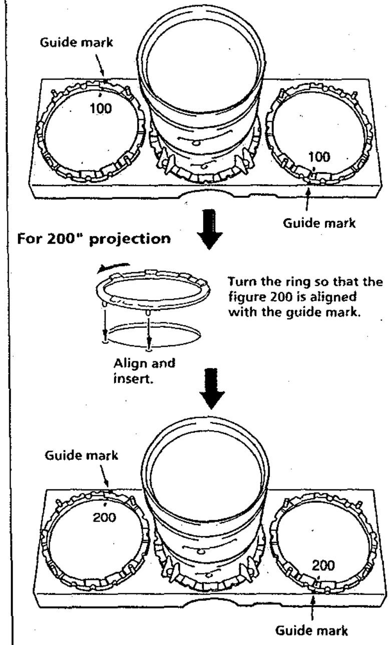
3 Detach the red and blue lenses from the lens base. Remove the four nuts of each lens to detach.



4 Adjust the positions of the lens spacers.

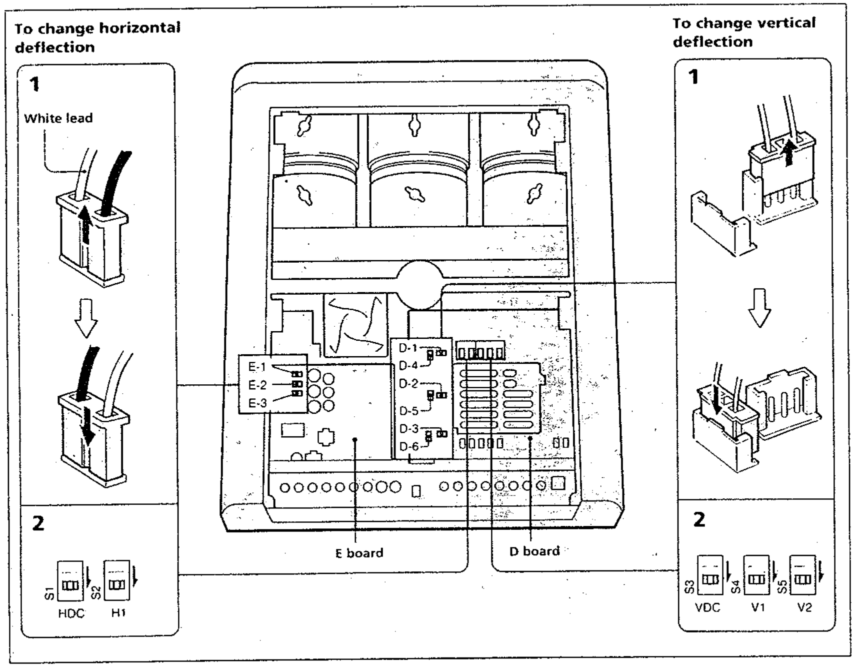
For 100" projection

For 200" projection


Guide mark
100
100
Guide mark
Turn the ring so that the figure 200 is aligned with the guide mark.
Align and insert.
Guide mark
200
200
Guide mark

Changing the Polarity

The projector is preset at the factory for use in front projection when installed on the floor/desk. When the projector is installed on the ceiling or used in rear projection, change the polarity. Horizontal and/or vertical deflection should be changed depending on the type of installation.
Front projection, ceiling: Horizontal and vertical
Rear projection, floor/desk: Horizontal
Rear projection, ceiling: Vertical
In case that the projected picture is not correct after changing the polarity, try to change the polarity again while watching the picture.



Preparation

- Turn off the power.
- Open the top panel. (See page 15.)

Changing the horizontal deflection

1 Reverse the polarity of connectors E-1, E-2 and E-3 on the E board.

2 Set the S1 and S2 switches on the D board to the control panel side position.

Changing the vertical deflection

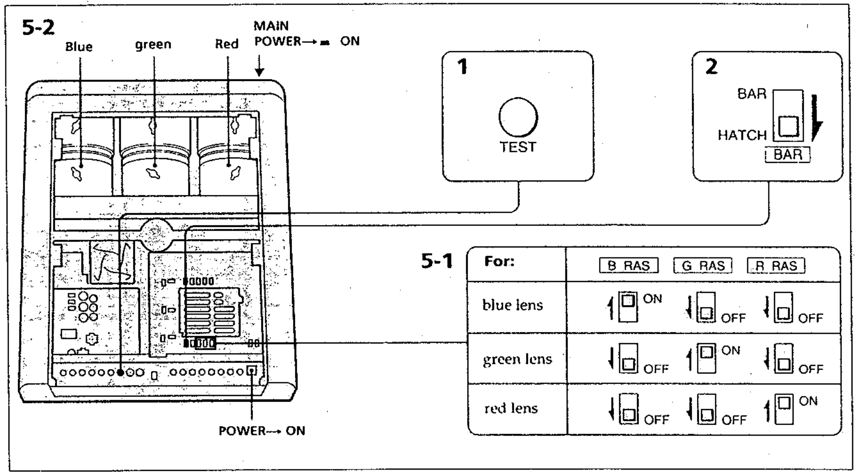
1 Move the connectors on the D board from the receptacles D-1, D-2 and D-3 to receptacles D-4, D-5 and D-6, respectively.

2 Set the S3, S4 and S5 switches on the D board to the control panel side position.

Note
Make sure to insert the connectors firmly.

1-14. LENS FOCUS ADJUSTMENT

The lens focus is adjusted at the factory for a 100" flat screen. For other types of screens, you should adjust the lens focus.



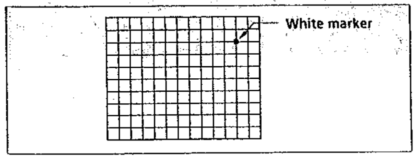
For:	B RAS	G RAS	R RAS
blue lens	ON	OFF	OFF
green lens	OFF	ON	OFF
red lens	OFF	OFF	ON

Preparation

1 Install the projector in the correct location.
2 Open the top panel. (See page 15.)
3 Connect the supplied power cord (mains lead) to the AC IN socket and to an AC outlet.
4 Press down the MAIN POWER switch. Press the POWER button on the control panel, if necessary.

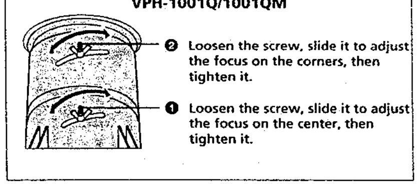
Adjusting the Lens Focus

1 Press the TEST button on the control panel.
2 Set the BAR switch to HATCH.
A cross hatch pattern is displayed.
3 Check that the cross hatch pattern is displayed inside the screen. If not, adjust the location of the projector.
4 Check that a white marker is displayed at the upper right as illustrated below.
If not, correct the polarity. (See page 20.)



5 Adjust the lens focus.
  1 Set the B RAS, G RAS and R RAS switches as illustrated above.
  2 Adjust the focus of blue, green and red lenses as follows:

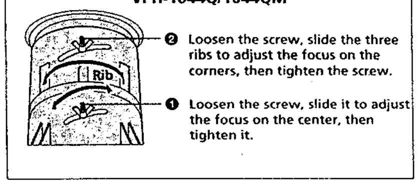
VPH-1001Q/1001QM



❷ Loosen the screw, slide it to adjust the focus on the corners, then tighten it.

❶ Loosen the screw, slide it to adjust the focus on the center, then tighten it.

VPH-1044Q/1044QM

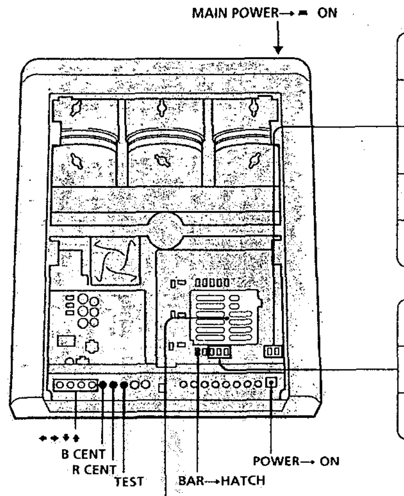


❷ Loosen the screw, slide the three ribs to adjust the focus on the corners, then tighten the screw.

❶ Loosen the screw, slide it to adjust the focus on the center, then tighten it.

1-15. REGISTRATION ADJUSTMENT

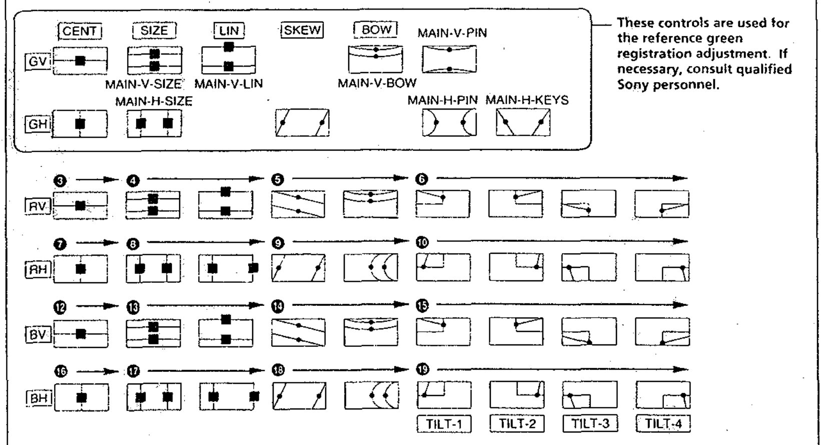
Use a small screwdriver to adjust the controls through the holes.


MAIN POWER→ ▬ ON
B CENT
R CENT
TEST
BAR→HATCH
POWER→ ON

Screen size	MODEL SELECT	SIZE SELECT
72" (70"–85")	100	150/72
100" (85"–125")	100	NORMAL
150" (125"–175")	200	150/72
200" (175"–250")	200	NORMAL

To adjust:	B RAS	G RAS	R RAS
Red registration	OFF	ON	ON
Blue registration	ON	ON	OFF

Controls for registration adjustment


CENT
SIZE
LIN
SKEW
BOW
MAIN-V-PIN
GV
MAIN-V-SIZE
MAIN-V-LIN
MAIN-V-BOW
MAIN-H-SIZE
MAIN-H-PIN
MAIN-H-KEYS
GH
These controls are used for the reference green registration adjustment. If necessary, consult qualified Sony personnel.
③ ④ ⑤ ⑥
RV
⑦ ⑧ ⑨ ⑩
RH
⑫ ⑬ ⑭ ⑮
BV
⑯ ⑰ ⑱ ⑲
BH
TILT-1
TILT-2
TILT-3
TILT-4

The circled numbers correspond to the step numbers (circled numbers) in the adjustment procedure on the next page.

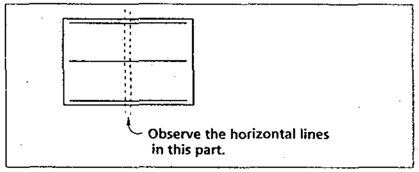
Preparations

1 Press the TEST button on the control panel to display the cross hair pattern.
2 Set the G RAS switch to ON and the B RAS and R RAS switches to OFF.
A green cross hatch pattern is displayed.
3 Check tthe location of the projector, polarity and lens focus.
4 Set the MODEL SELECT and SIZE SELECT switches to appropriate positions according to the screen size.

Adjusting the Red Registration

Vertical registration adjustment

① Set the B RAS switch to OFF and the G RAS and R RAS switches to ON.
Green and red hatch patterns are displayed.
② Press the R CENT button on the control panel and set the H and V adjustment levels to "00" with the arrow buttons.
③ Adjust the RV CENT control so that the red and green horizontal lines converge in the center of the screen.
④ Adjust the RV SIZE control (and the RV LIN control, if necessary) so that the red and green horizontal lines converge at the upper and lower sides of the screen.

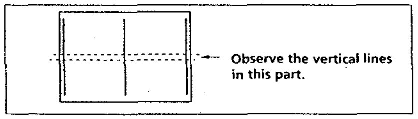

Observe the horizontal lines in this part.

(If necessary, repeat steps ③ and ④.)

⑤ Adjust the RV SKEW and RV BOW controls if the red and green horizontal lines do not converge in the middle of the screen.
⑥ Adjust the RV TILT-1 through TILT-4 controls so that the red and green horizontal lines converge on the corners of the screen.

Horizontal registration adjustment

⑦ Adjust the RH CENT control so that the red and green vertical lines converge in the center of the screen.
⑧ Adjust the RH SIZE control (and the RH LIN control, if necessary) so that the red and green vertical lines converge at the right and left sides of the screen.


Observe the vertical lines in this part.

(If necessary, repeat steps ⑦ and ⑧.)

⑨ Adjust the RH SKEW and RH BOW controls so that the red and green vertical lines converge in the middle of the screen.
⑩ Adjust the RH TILT-1 through TILT-4 controls so that the red and green vertical lines converge on the corners of the screen.

Adjusting Blue Registration

Proceed to the following blue registration adjustment in the same manner as with red registration adjustment. Set the R RAS switch to OFF and the B RAS and G RAS switches to ON.

Vertical registration adjustment

⑪ Press the B CENT button on the control panel and set the H and V adjustment levels to "00" with the arrow buttons.
⑫ Adjust the BV CENT control to adjust the center of the screen.
⑬ Adjust the BV SIZE control, and the BV LIN control if necessary, to adjust the upper and lower sides of the screen.
⑭ Adjust the BV SKEW and BV BOW controls to adjust the middle of the screen, if necessary.
⑮ Adjust the BV TILT-1 through TILT-4 controls to adjust the corners.

Horizontal registration adjustment

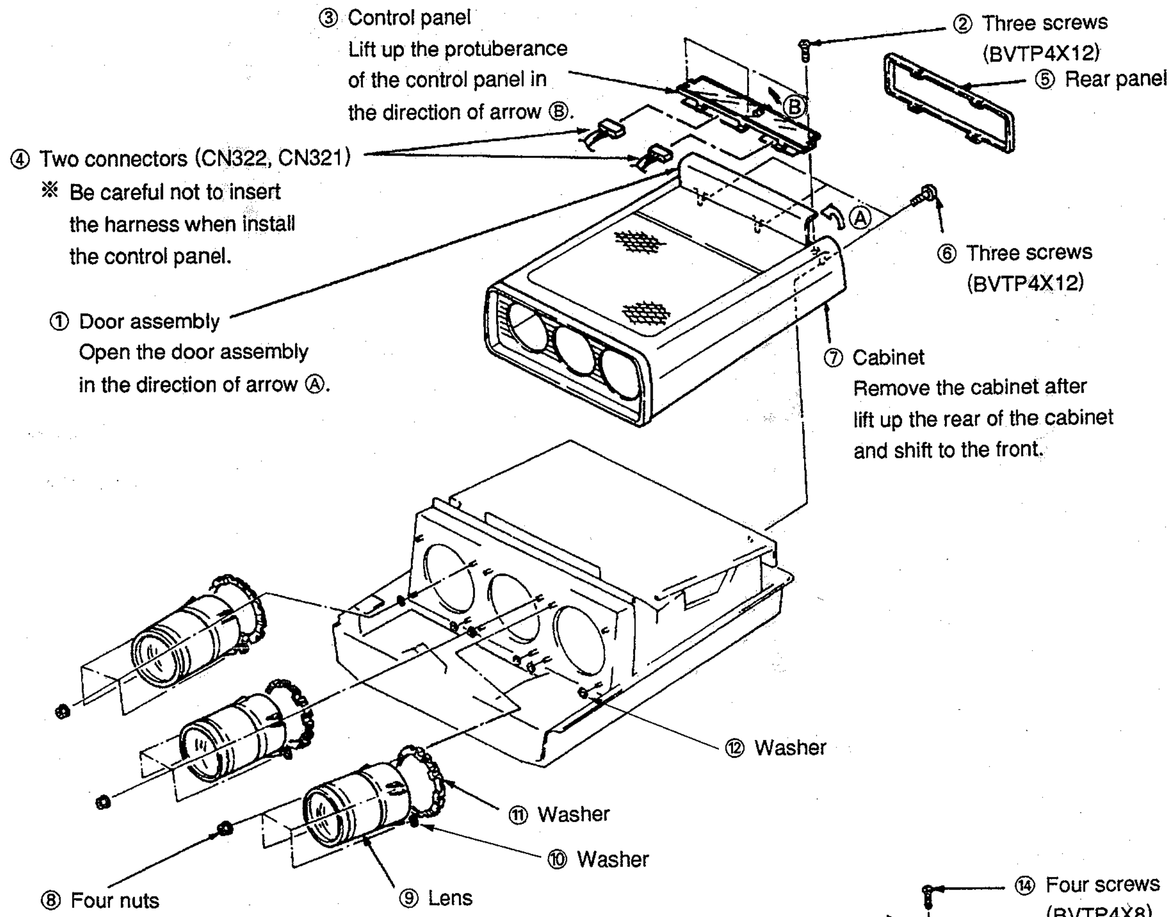
⑯ Adjust the BH CENT control to adjust the center of the screen.
⑰ Adjust the BH SIZE control, and the BH LIN control if necessary, to adjust the right and left sides of the screen.
⑱ Adjust the BH SKEW and BH BOW controls to adjust the middle of the screen.
⑲ Adjust the BH TILT-1 through TILT-4 controls to adjust the corners.

When the Registration Adjustment is Complete

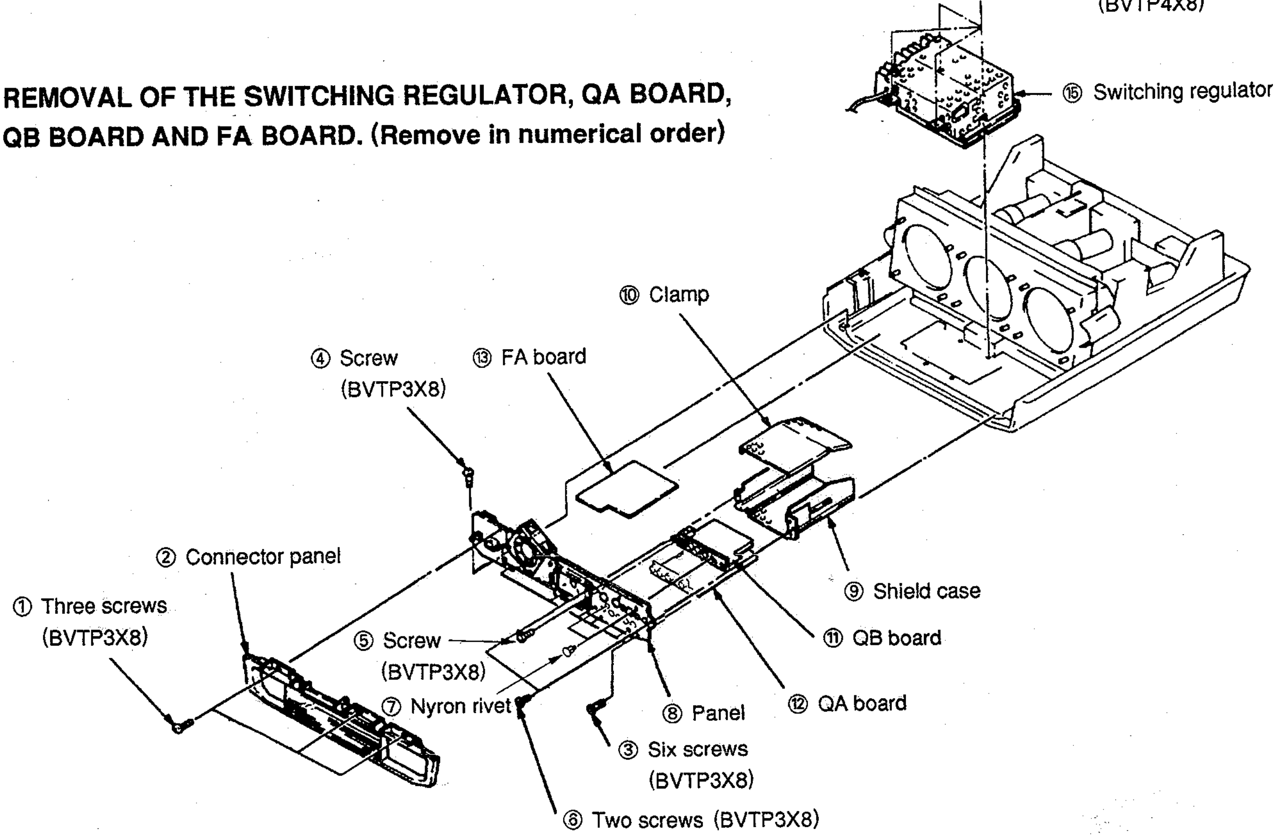
1 Set the R RAS, G RAS and B RAS switches to ON, and the BAR switch to BAR.
2 Press the TEST button on the control panel to return to the normal display.
3 Reinstall the top panel. (See page 16.)

SECTION 2
DISASSEMBLY

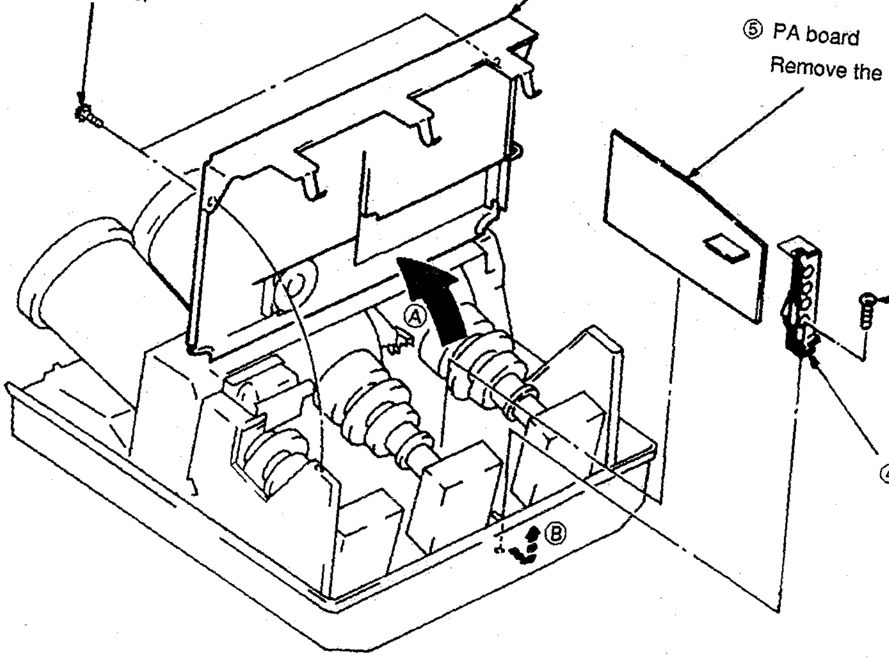
2-1. REMOVAL OF THE CABINET AND THE LENS. (Remove in numerical order)


③ Control panel
Lift up the protuberance of the control panel in the direction of arrow Ⓑ.
② Three screws (BVTP4X12)
⑤ Rear panel
④ Two connectors (CN322, CN321)
※ Be careful not to insert the harness when install the control panel.
Ⓑ
Ⓐ
⑥ Three screws (BVTP4X12)
① Door assembly
Open the door assembly in the direction of arrow Ⓐ.
⑦ Cabinet
Remove the cabinet after lift up the rear of the cabinet and shift to the front.
⑫ Washer
⑪ Washer
⑩ Washer
⑧ Four nuts
⑨ Lens

2-2. REMOVAL OF THE SWITCHING REGULATOR, QA BOARD, QB BOARD AND FA BOARD. (Remove in numerical order)


⑭ Four screws (BVTP4X8)
⑮ Switching regulator
⑩ Clamp
④ Screw (BVTP3X8)
⑬ FA board
② Connector panel
① Three screws (BVTP3X8)
⑤ Screw (BVTP3X8)
⑦ Nyron rivet
⑧ Panel
③ Six screws (BVTP3X8)
⑥ Two screws (BVTP3X8)
⑨ Shield case
⑪ QB board
⑫ QA board

2-3. REMOVAL OF THE PA BOARD. (Remove in numerical order)



① Two screws
(BVTP4X8)

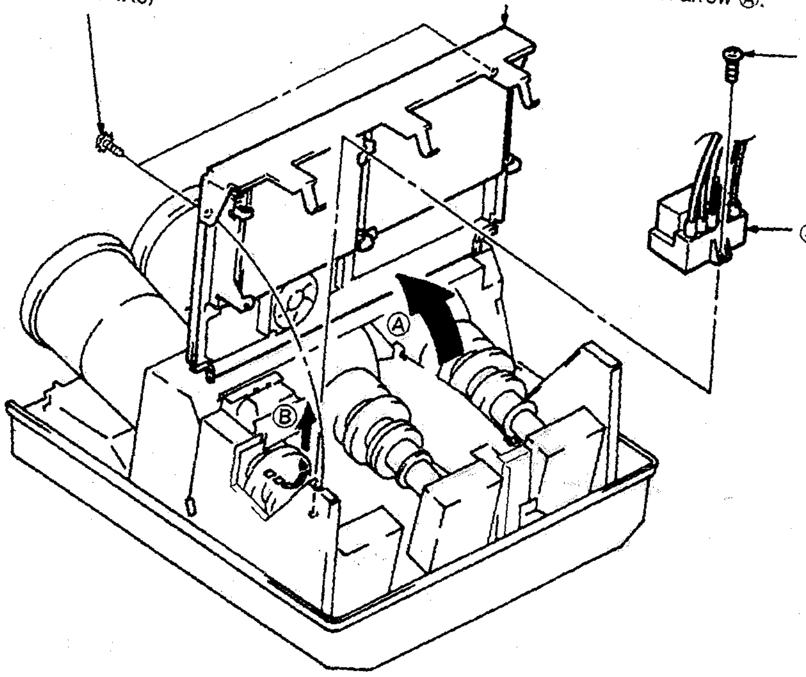
② Blanket
Open the blanket in the direction of arrow Ⓐ.

⑤ PA board
Remove the PA board follow the arrow Ⓑ.

③ One screw
(BVTP3X8)

④ Bracket
Remove the bracket
follow the arrow Ⓑ.

2-4. REMOVAL OF THE HIGH-VOLTAGE DC BLOCK. (Remove in numerical order)



① Two screws
(BVTP4X8)

② Bracket
Open the bracket in the direction of arrow Ⓐ.

③ One screw
(BVTP4X8)

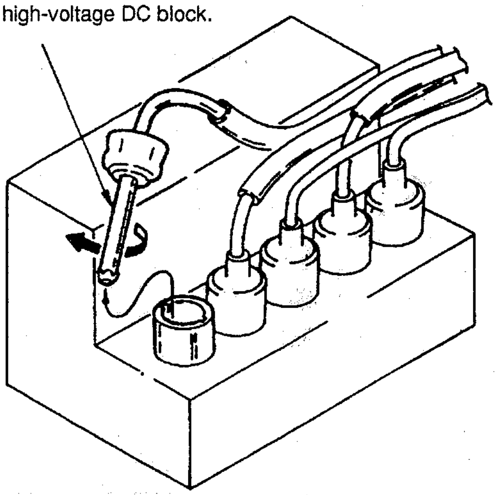
④ High-voltage DC block
Remove the high-voltage DC block
follow the arrow Ⓑ.

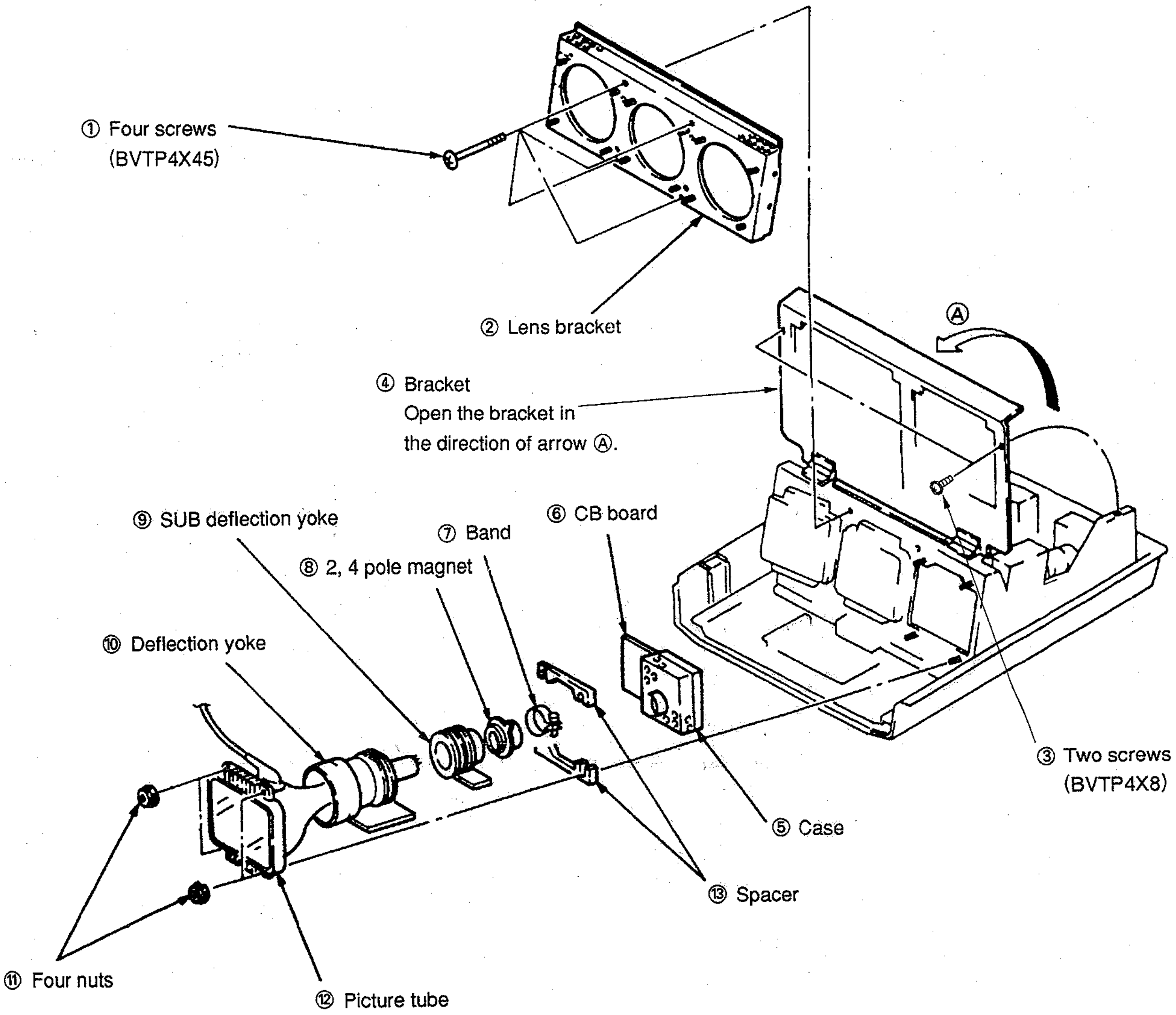
2-5. REMOVAL OF THE PICTURE TUBE. (Remove in numerical order)

Removal of the high-voltage cable.

① Pressing cable and turn 90°

② Pull out a high-tension lead wire connected to the high-voltage DC block.




① Four screws
(BVTP4X45)
② Lens bracket
Ⓐ
④ Bracket
Open the bracket in the direction of arrow Ⓐ.
⑨ SUB deflection yoke
⑦ Band
⑥ CB board
⑧ 2, 4 pole magnet
⑩ Deflection yoke
③ Two screws
(BVTP4X8)
⑤ Case
⑬ Spacer
⑪ Four nuts
⑫ Picture tube

SECTION 3
CIRCUIT DESCRIPTION

3-1. POWER SUPPLY BLOCK

The video projectors of VPH-1001,1044 series have the rectifier circuit which is commonly used in all models of these series, enabled by isolating the fuse circuit blocks from the rectifier. The projectors of these series can be used all over the world by using. the voltage selector.

Power is supplied to the projector from switching regulator. The output voltage from the switching regulator (TK-15) is 115V ± 15V.

[Starting Up Procedure of Power Supply Block]

When the MAIN POWER switch is turned on, about 28V voltage appears at the FA-3 connector pin-1 which is supplied from the FA board T2, and the rectifier circuit of D2, C10 and C11. This voltage is output to the QA board IC9 pin-3 from FA-3 via CN118 connector. When the POWER switch is turned on under this condition, the QA board Q22 and Q24 are turned on to conduction by the signal from QA board CN114 pin-5. This outputs 12V from Q24 collector. The 12V output energizes the oscillation circuit of the switching power supply circuit which provides power to the projector.

3-2. BA BOARD

3-2-1. Y-Signal System

1. Trap Circuit

The input video signal passes through Q11 and then input to a trap circuit.

This trap circuit removes chroma signal component from the input video signal. Because this series of projector accepts input video signal of three different subcarriers which are PAL, SECAM, NTSC3.58 and NTSC4.43 (PAL and NTSC4.43 use the same subcarrier frequency), the separate subcarrier trap circuits are prepared and are switched depending upon the input signal as described below.

[When the input signal is PAL or NTSC3.58]

The input video signal is passed through a low-pass filter FL4, amplified by Q30/Q26, clamped by Q18/D10, and input to the digital comb filter IC10 pin-1. The digital comb filter IC10 functions as a PAL filter when pin-24 is set to high while it functions as a NTSC3.58 filter when pin-24 is set to high. It outputs Y-signal from pin-13. The Y-signal is then input to IC3 pin-17 where it is delayed, and output from pin-11. The delayed Y-signal is amplified by Q118/QA119/Q120, and input to IC6 pin-1. IC6 is the Y-signal switch which switches either NTSC3.58, PAL, SECAM, NTSC4.43, YC or B/W output signal depending on the input signal.

[When the input signal is SECAM, NTSC4.43 or YC]

The video signal is input to a band-pass filter BPF1 pin-2. BPF1 and BPF2 are the 4.43MHz and 4.25 MHz traps. The traps are controlled at BPF1 pins-4/-5 and BPF2 pins-2/-3. By setting these pins to high, the traps work. These traps work as shown in Table 1 when SECAM, NTSC4.43 or YC signal is input. The signal from the traps is output from BPF2 pin-5. The Y-signal output from BPF2 pin-5 is delayed by DL102 and input to IC6 pin-3.

Signal	BPF1 pin-4 BPF2 pin-3	BPF1 pin-5 BPF2 pin-2	Output Waveform
SECAM	H	H	4.43MHz, 4.25 MHz trapped output
NTSC4.43	H	L	4.43MHz trapped output
Y/C	L	L	Through output

Table 1

[When the input signal is B/W]

The B/W video signal is passed through Q11 and Q52, and then input to the switch IC6 pin-6.

2. IC6 (CX894)

IC6 is the Y-signal switch which switches either NTSC3.58/PAL, SECAM/NTSC4.43, YC or B/W output signal depending on the input signal. (Fig. 1)

Operating Mode	Pin-2	Pin-6
NTSC3.58／PAL	H	L
SECAM/NTSC4.43/YC	L	H
B/W	L	L

Table 2

3. IC7 (CX894)

The Y-signal output from IC6 is input to delay line DL103 pin-1. The output signals from the delay line are provided at pins-2, -4 and -6 with the delay of 20 nsec, 60 nsec and 100 nsec. These output signals are connected to IC7 pins-1/-6/-3. When the Y DELAY of "−" is selected, the output signal from pin-1 is selected. When the Y DELAY of STD is selected, the output signal from pin-6 is selected. When that of "+" is selected, the output signal from pin-8 is selected and output.

4. IC12 (SHARPNESS IC)

The Y-signal output from IC7 pin-8 is amplified by Q317/Q318, and is input to the SHARPNESS IC pin-28. The Y-signal receives frequency peaking at around 3.6 MHz in IC12 and is output from pin-26. The SHARPNESS control pin is IC12 pin-25 to which the control voltage ranging from 3V – 5V is input. The Y-signal output from IC12 is input to the RGB matrix IC8 (CXA1216P) pin-7.

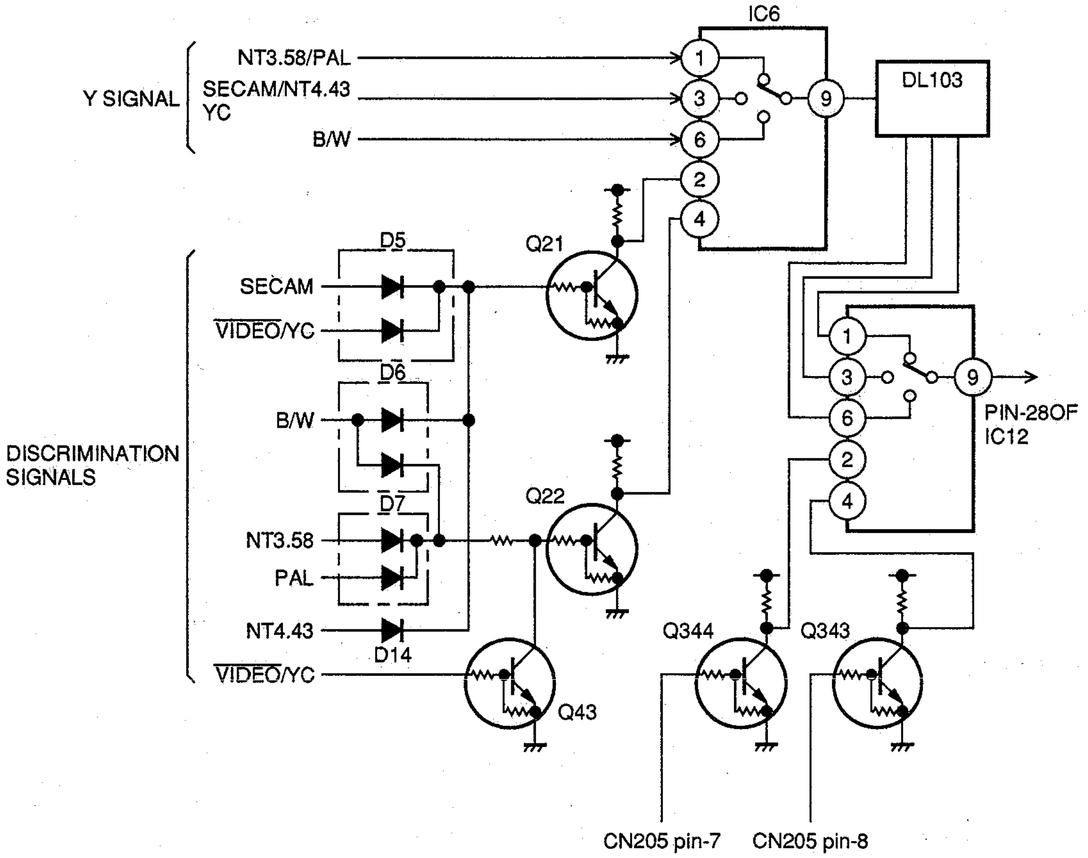

IC6
Y SIGNAL
NT3.58/PAL
SECAM/NT4.43
YC
B/W
1
3
6
2
4
9
DL103
DISCRIMINATION SIGNALS
SECAM
VIDEO/YC
B/W
NT3.58
PAL
NT4.43
VIDEO/YC
D5
D6
D7
D14
Q21
Q22
Q43
Q344
Q343
1
3
6
2
4
9
PIN-28OF IC12
CN205 pin-7
CN205 pin-8

Fig. 1

3-2-2. Chroma Signal System

When the PAL or NTSC3.58 signal is input, the chroma signal is separated and output from the comb filter IC10 pin-15, and then input to IC1 pin-13. When the SECAM or NTSC4.43 signal is input, the chroma signal is separated by the comb filter and input to IC1 pins-3/-5. When the YC signal is input, the chroma signal is input to IC1 pin-12. The chroma signal output from IC1 pin-15 and is sent to their respective band-pass filters which are shown in Fig. 2.

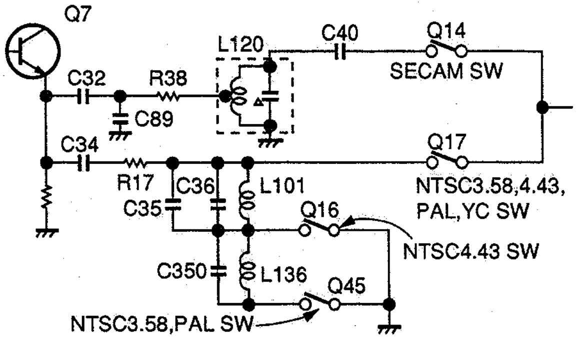

Q7
L120
C40
Q14
SECAM SW
C32
R38
C89
C34
Q17
R17
C36
L101
NTSC3.58,4.43, PAL,YC SW
C35
Q16
NTSC4.43 SW
C350
L136
Q45
NTSC3.58,PAL SW

Fig. 2

1. IC2 (TDA4555)

   After passing through the respective band-pass filters, the chroma signal is input to the decoder IC (TDA4555) pin-15. For the PAL and SECAM signals, these signals are once output from pin-12, delayed by delay line. The 1H delayed signal is then input to pin-10. The 1H delayed signal is adjusted of its phase and amplitude by L105 and RV101, and is added to the chroma signal which is input from pin-15. The chroma signal and the 1H delayed chroma signal are added and decoded so that the R-Y signal is output from pin-1 while the B-Y signal is output from pin-3.

The ID circuit consists of the following three circuits:

a. Phase discriminator circuit which compares the PAL and NTSC burst signal with the internal reference signal.
b. Frequency discriminator circuit which generates H/2 signal that is required for SECAM transmission. Internal phase discriminator circuit. External phasing circuit (SECAM/ID reference circuit) which is externally connected to pin-22.
c. Logic circuit for H/2 detection and ID detection of PAL and SECAM systems.

2. HUE/COL Control
   The HUE/COL control voltage is output from CN206 pins-2/-3 in the range from 0V – 8V. It is level-converted to the control voltage ranging from 2V – 7V and is input to IC8 pins-25/-26. The three adjustments SUB HUE (RV105 adjustment for NTSC), HUE Adj (RV107) and SUB COL (RV106) are provided to correct variations of IC and resistance values of resistors.

3. SUB PICTURE Control
   The PICTURE control pin is IC8 (CXA1216P) pin-27. The PICTURE level is adjusted by controlling RV102 (SUB PIC).

3-2-3. IC15 (H8B7178B)

IC15 has the function of separating the sync signal and outputting the Sandcastle pulses (S.C.P). The Y-signal output from IC7 pin-8 is amplified by Q336/Q337/Q338, clamped by D201, amplitude-limited by D303/D304 and is input to IC15 pin-3.
IC15 outputs the S.C.P. from pin-1, and outputs the V. sync from pin-8.
The S.C.P. is input to IC2 (TDA4555) pin-24. The S.C.P. and the chroma signal input at pin-15 have the phase relation as shown in Fig. 3.

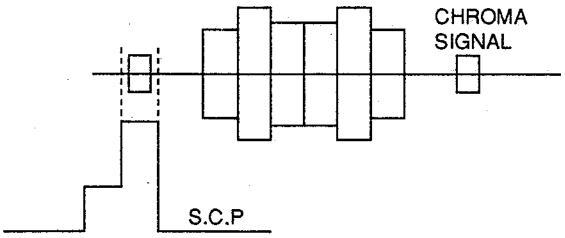


Fig. 3

3-2-4. IC11 (CX7916)

CX7916 is the IC which discriminates whether the input V. sync is 50Hz or 60Hz, and operates as shown in Table 3.

Input	Pin-2	Pin-3
50Hz (PAL, SECAM)	L	H
60Hz (NTSC3.58/NTSC4.43)	H	L

Table. 3

3-2-5. B/W Discrimination

When a color signal is input, either one of pin-25, 26, 27, or 28 of IC2 goes high (6V) which turns on Q23 so that Q23 collector is set to low. When a B/W signal is input, oscillation is sustained in the range from 0V – 3V so that Q23 is not turned on which maintains Q23 collector to high.

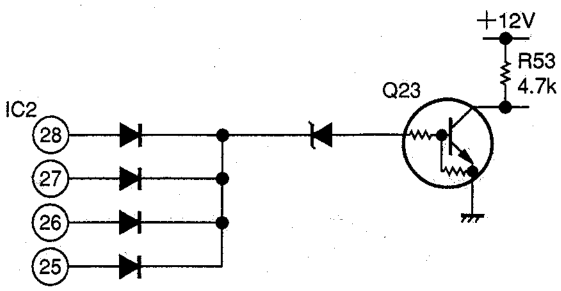


Fig. 4

3-2-6. IC8 (CXA1216P)

IC8 (CXA1216P) is the R.G.B. matrix IC. The Y-signal is input to pin-7, the B-Y is input to pin-6, and the R-Y signal is input to 5. The BLK pulse is input to pin-1, and the B.P. CLAMP pulse is input to pin-3. The R.G.B. signal is output from pins-19/-17-15. Pin-11 is the auto pedestal pin which makes the Dynamic Picture function valid when the control signal input from CN206 pin-1 is set to high.

3-2-7. IC5 (NJM2228)

IC5 has the function to oscillate the clock signal which is required by the comb filter, and is input to the comb filter IC10 pin-8. When the NTSC3.58/PAL is input, and oscillation of X101/X102 which is connected to IC2 pin-19 is started, the clock signal is input to IC5 pin-1 via Q202/Q203. From IC5 pin-4, the clock signal of the two times the input signal is output, amplified by Q205/Q206/Q207, and is input to IC10 pin-8.

3-3. BB BOARD

The BB board consists of the video signal system, blanking signal system and microprocessor system.

3-3-1. Video Signal System

The video input signal from CN301 is clamped by D104/D106, and is super-imposed by the digital display data from the microprocessor at IC103. Before entering IC103, the video signal is clamped to match the signal amplitude with that of the microprocessor data. The clamp pulsed which is used for this clamp, is generated from the composite sync when input signal is being input. It is generated from the H. RET PULSE when no input signal is being input. Discrimination of no input signal is accomplished by Q209/210. The clamp pulses are switched by IC211. The super-imposed video signal is input to IC104 where the DRIVE level of the video signal is switched, when the input video signal has aspect ratio of 16:9. IC301 has the functions of clamping, blanking, PICTURE control and BRIGHTNESS control on the video signal. The output signal from IC301 is amplified by Q301/Q305/Q308, and is output to the C board.

1. ABL Circuit

This series of projector has three kinds of ABL circuit which are the single tube ABL, the peak ABL and the total ABL.

Single Tube ABL

The cathode current is converted to voltage level. The converted R. G. B. cathode voltages are input from the CR, CG and CB boards via each pin-5 of the CN311, CN312 and CN313 connectors. They are passed through Q320, Q321 and Q322. Only the cathode voltage which has the largest amplitude of the three cathode voltages is selected, amplified by an inverting amplifier IC304, and is input to Q319 emitter. Because base of Q319 is receiving the voltage which is determined by R370/R364/R365/R366, the transistor Q319 is turned on if the voltage lower than -Vbe is input to its emitter. If Q319 is turned on, Q313 base potential is lowered which decreases the IC301 PIC control voltage so that the projector screen is darkened.

Peak ABL

The cathode voltages which are generated in the same manner as in the signal tube ABL circuit, are mixed by R379/R380/R381. The mixed signal is input to the inverting amplifier IC304. The remaining circuit operations after IC304 are the same as those of the single tube ABL circuit.

Total ABL

The cathode voltage signal output from IC304 in the peak ABL circuit is integrated, amplified by IC302 and is output to Q317. This signal performs the same function as in the other ABL circuits. To protect the phosphor of the CRT display screen from burning-in, the ABL reference voltage in the 16:9 aspect ratio mode is decreased lower than that in the 4:3 aspect ratio mode, in the single tube ABL and the total ABL circuits. Switching of the ABL reference voltage is accomplished by turn Q315/Q316 on and off. In practice, as Q315/Q316 are turned on (in the 4:3 aspect ratio mode), R363 and R366 are canceled so that the ABL reference voltage increases higher than the 16:9 aspect ratio mode (when Q315/Q316 are turned off). As the result, the ABL in the 16:9 mode starts operating at the point of lower BRIGHTNESS than that in the 4:3 mode.

2. DRIVE Switching in 16:9 Aspect Ratio Mode

To provide the same brightness apparently in the 16:9 aspect ratio mode as in the 4:3 aspect ratio mode, the DRIVE dc level is increased in the 16:9 aspect ratio mode. Switching of the DRIVE dc level is performed by IC104 (4066, switch). Taking the red channel for example, the R-in ¨ and R-out ≠ are connected together inside IC104 so that R130 is canceled. In the 16:9 aspect ratio mode, R-in and R-out are kept separated so that R130 is made to work. The DRIVE dc voltage is divided by the resistors R129 and R130 which decreases the DRIVE dc level.

3-3-2. Blanking Signal System

1. H.BLK Generator Circuit

The H. pulse output from the D board is input to CN304 pin-6, wave-shaped and then input to IC202 pin-14. At the same time IC202 pin-3 receives the pulse as shown in Fig. 5 (b). Phase difference between these two input signals is detected and converted to voltage data which is output from pin-13. This signal is input to pin-9. Pin-4 outputs the rectangular wave, frequency of which is the Horizontal frequency divided by 64 as shown in Fig. 5 (c). The rectangular wave is input to the counter IC203 pin-1. The output signals from IC203 are logic-ANDed by IC208 and IC209, and are input to the D-flip-flop IC207 as the DATA, CLOCK and RESET signals. The H BLK signal is thus generated and output from IC207 pin-13.

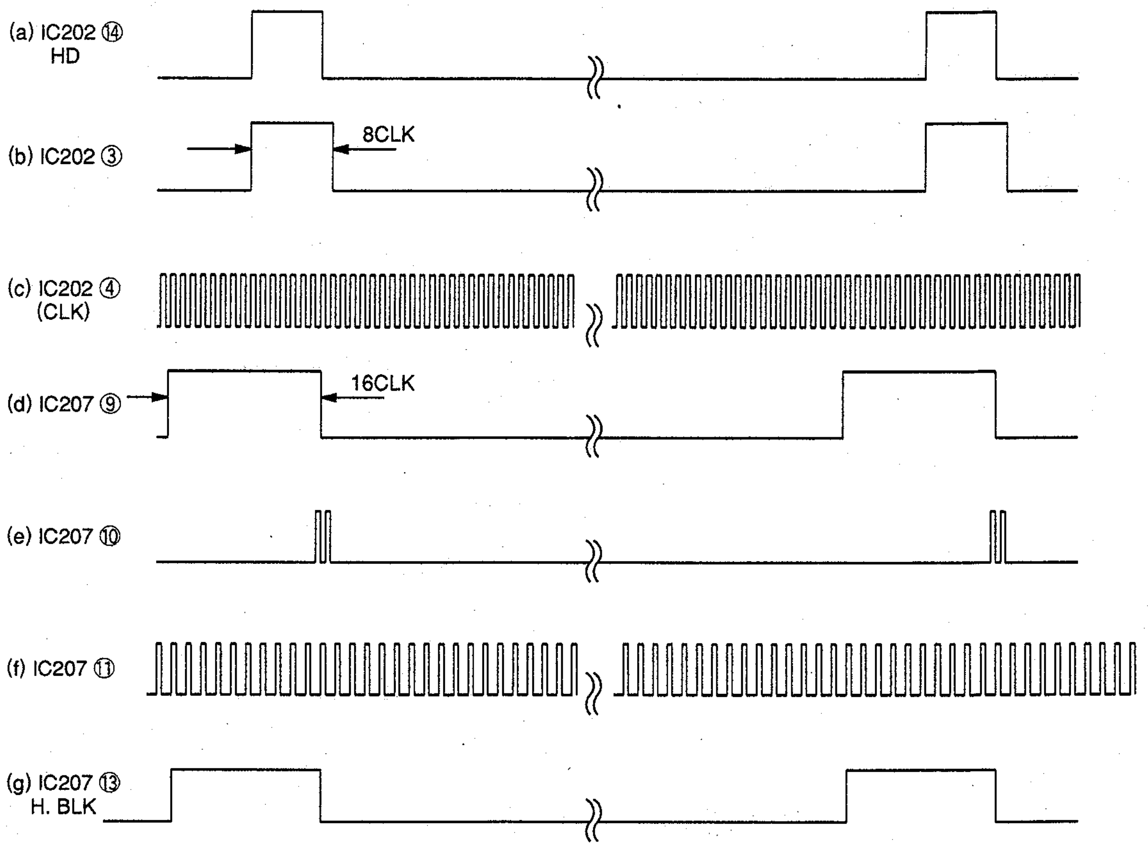


Fig. 5 H BLK

2. V.BLK Generator Circuit

The V. RET. PULSE signal output from the D board is input to IC207. The H. BLK signal is also input to IC207 as the CLK signal. IC207 generates and outputs the V. pulse from pin-1 which is in phase with the H. BLK. The V. pulse is input to IC204 pin-14 which generates the V. BLK pulse in the same manner as the H. BLK generator circuit. The V. BLK pulse is input to the OR logic gate IC205 (to be described later), and then input to IC210 where the phase of the V. BLK pulse is brought into the same phase as the V. H.. BLK again. The V. BLK pulse is output from IC210 pin-13.

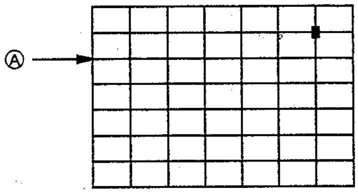
3. C. BLK Generator Circuit

Both the H. BLK and V. BLK pulses are mixed at IC206 to generate the C. BLK pulse. The C. BLK pulse is routed through the BLK on/off switch, mixed then with the H. and V. retrace pulses, and is input to IC301 pin-13. The reason why the C. BLK pulse is mixed with the H. and V. retrace pulses is as follows: When the BLK on/off switch is set to off, the BLK will be completely removed which shows the retrace period on the display screen. In order not to show the retrace period on the display, the minimum BLK is added by mixing the H. and V. retrace pulses with the C. BLK pulse.

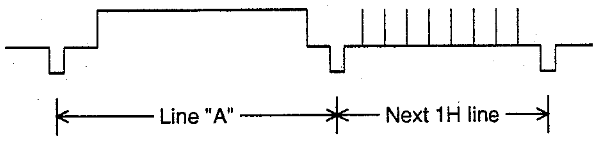
4. DOT Signal Generator Circuit

As the DOT switch on the D board is turned on, CN306 pin-3 goes low which turns off Q207. At the same time the mesh signal is input to Q206 after it is integrated by R246/C221, C206 collector generates the signal having the wave shape as shown in Fig. 6 (c). This signal is input to IC206 pin-12 mixed, integrated again by R237/C218 and is input to IC210 pin-9. Thus the signal is generated which provides one bright horizontal line while BLK of the next horizontal period is canceled. As the result the portions only shown in Fig. 6 (d) have the bright spots on display. This is the DOT signal.

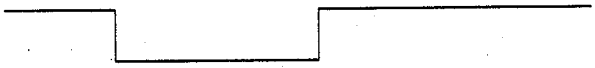
(a) Mesh signal



(b) Wave shape of the line "A", and that of the next 1H line



(c) Q205 collector wave shape



(d) How the BLK works

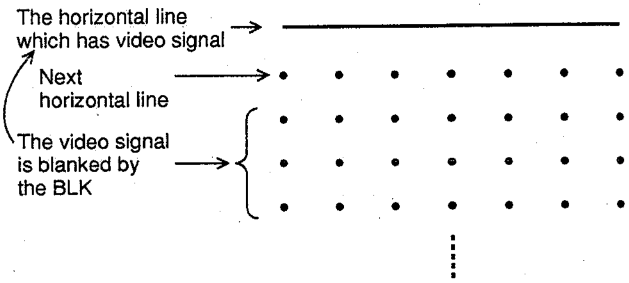

The horizontal line which has video signal
Next horizontal line
The video signal is blanked by the BLK

Fig. 6 Generation of DOT signal

3-3-3. Microprocessor System

Functions of the microprocessor (IC405) pins are described below.

Pins 2 – 12 and 59 have the functions as listed below with their High/Low levels.

Pin Name	Function	Direction	High	Low
2 NO SIG	Signal exist/not detect line	IN	Not	Yes (exist)
3 LINE/RGB	Video/RGB switching	OUT	Video	RGB
4 NORMAL/TEST	Test mode switching	OUT	Normal	Test mode
5 V/S	Video/S Video switching	OUT	Video	S. Video
6 RGB/NOT	Inst model detect line	IN	CONS	INST
7 V/V INV	Ceiling type detect line	IN	Normal	Ceiling
8 H/H INV	Rear projection detect line	IN	Normal	Rear proj
9 CODE 2	Source signal detect line	IN	See next Table 5	See next Table 5
10 CODE 1	Source signal detect line	IN	See next Table 5	See next Table 5
11 PROTECT	Protect detect line	IN	Normal	Protect
12 V60/50	fv detect line	IN	60 Hz	50Hz
13 POWER	Power On/Off	OUT	On	Off

Table 4

The input signal is discriminated using the source discrimination line (CODE 1, 2) and the fv discrimination line as shown below. (The High and Low are the signal level as viewing the microprocessor terminals directly.)

CODE 1	CODE 2	V60/50	SOURCE
High	High	High	NTSC4.43
High	High	Low	SECAM
High	Low	High	B/W
High	Low	Low	B/W
Low	High	High	NTSC3.58
Low	High	Low	PAL
Low	Low	High	B/W
Low	Low	Low	B/W

SOURCE	CODE 1	CODE 2	V60/50
NTSC3.58	Low	High	High
NTSC4.43	High	High	High
PAL	Low	High	Low
SECAM	High	High	Low
B/W	•••••	Low	•••••

Table 5

Pins-13 – 16, and pins 20 – 24: Key Scan
The scan pulses are output from pins-13 – 16 to HA and HB boards. They are received by pins 20 – 24.

Pin-19, and pins 29 – 31: Three-conductor Bus
Data is transmitted to the D/A converter IC409.

Pin-26: SIRCS IN
SIRCS input pin. The SIRCS signal received from the remote control unit is input to the microprocessor.

Pin-34 and -35: EXTAL and EXTAL
The external crystal circuit is connected to the pins to generate the clock signal of the microprocessor. The oscillating frequency is about 4 MHz.

Pin-36: /RST
Reset pin to the microprocessor. The reset pulse is input when the power is turned on or when the microprocessor runs away.

Pin-38: Pulse Output to Reset IC
The reset circuit is described later.

Pin-44: VP
The microprocessor operates in synchronism with the V. PULSE. This is the V. PULSE input which is the reference to the microprocessor.

Pin-45 and -46: EXLC and XLC
The external oscillator circuit for OSD (On-Screen-Display) is connected to the pins. The oscillating frequency is about 8 MHz.

Pin-47 and -48: H. SYNC and V. SYNC
The H. SYNC and V. SYNC input which determine the size and position of OSD letters and symbols.

Pins-49 – 51: R. G. B.
The OSD output pins.

Pin-52: BLK
The BLK output pins for OSD. It is used for switching with video signal.

Pins-53 – 56: SCL0, SCL1 SDA0 and SDA1
The IC bus. The data is transmitted and received to and from the D/A converter IC403, IC406, and NVM memory (non-volatile memory) IC407.

Reset Circuit

The reset IC (IC404) outputs the reset pulse from the RESET pin-8 unless the pulse is successively input to the pin-3 CLK. To keep inputting the pulse, the microprocessor is sending the pulse to the reset IC at vertical rate from the microprocessor pin-38. If the microprocessor should run away, the microprocessor stops outputting the vertical rate pulse so that the system is reset.

D/A Converter

The control signals such as Picture, Brightness etc., are the DC signals which are generated by the D/A converter connected to the microprocessor (IC405). The D/A converter IC403 output the controls signals of Picture, Brightness, Hue, Color and Sharpness. The Picture control signal is amplified by IC303, while the Brightness control signal is amplified by IC302. These control signals are input to IC301. The Hue, Color and Sharpness control signals are buffered by IC401 and IC402, and are output to the BA board. The D/A converter IC406 generate the Volume control signal which is output to the QA board. The D/A converter IC409 generates the user's registration (RH, RV, BH, and BV) control signals and the D Picture and Y Delay controls signals. The registration control signal is output to the D board while the D Picture and the Y Delay control signals are output to the BA board.

3-4. CR, CG, CB BOARDS

Because operations of the CR, CG and CB boards are entirely identical, the CR board only is described below.
The input signal from the BB board is amplified by Q701 (which cascade-connected with the BB board Q301). The signal is buffered by Q702, Q703 and drives Q704 which outputs the signal to CRT cathode. The cathode current flows through Q704 as its collector current, and is converted to the voltage value by R713. The converted voltage signal is output to the BB board.

3-5. D BOARD

The D board has the following functions.

1. Horizontal oscillation circuit
2. Vertical oscillation circuit
3. Wave shape generation circuit
4. Registration matrix
5. V. OUT
6. SUB OUT
7. Switching to 16:9

1. Horizontal oscillation circuit
2. Vertical oscillation circuit

The IC1 is the IC chip which is so called the Jungle IC. It comprises the horizontal sync separation, AFC, horizontal oscillation, horizontal pre-drive, vertical sync separation, vertical oscillation, vertical drive and vertical retrace blanking circuits. The horizontal-related circuits are IC1 pins 1 through -11 while the vertical-related circuits are pins 12 through -22.

The COMP SYNC IN appears at IC1 pin-1 as the sync signal separation is performed inside the IC. The slice level for the sync separation is determined by the externally connected capacitor and resistor. Because the SYNC SEP OUT signal at pin-2 is generated by passing the separated composite sync signal through differentiation circuit, the vertical sync is removed and only the H. SYNC is isolated at pin-2. As the SYNC SEP OUT is used commonly in the signal system circuit, the V. SYNC is again added at Q17 to the SYNC SEP OUT which is then output to the BB board. Pin-3 is the AFC input pin which receives the H. PULSE after the H. PULSE is wave-shaped by Q2/Q3 and integrated by resistor and capacitor. The projector types equipped with the RGB function has the H. SHIFT circuit which enables to shift the video signal phase so that the video image can be shifted in right and left on the display screen. This can be accomplished by changing the bias input at pin-3 which changes the AFC phase. The SYNC SEP signal and the input signal to pin-3 are compared. The result of comparison is output to pin-4. Pin-4 is connected to pin-5 through capacitor and resistor, forming the AFC circuit which controls the horizontal oscillation circuit. The resistor and capacitor connected externally to pin-5 determine the free-run frequency of horizontal oscillation, equipped with two adjustment controls: for RGB (RV1) and for LINE (RV2). Pin-10 outputs the H. DRIVE OUT for the horizontal deflection drive.

The Jungle IC has the two sync signal separation circuits. The V. SYNC SEP IN signal is input to pin-22 where sync signal separation is performed inside the IC. Its slice level is determined by resistor and capacitor connected externally. The SYNC SEP OUT signal is output from pin-20. Because the input signal is composite signal, the output signal from pin-20 is also composite sync signal. The output sync is integrated to separate the V. SYNC signal only to generate the V. HOLD signal. If the trigger signal is input to pin-19, the oscillating frequency is locked to the frequency of the trigger input. Pin-12 outputs the V. DRIVE OUT signal which is the positive pulse of 12V in phase with the input V. SYNC signal. The pulse width of the V. DRIVE OUT signal is determined by the resistor and capacitor connected externally to pin-13.

3. Wave shape generation circuit

IC2 is the fundamental wave shape generation IC generating the various fundamental wave shapes as it receives the H. pulse to pin-21, V pulse to pin-12, and V. SAW signal to pin-8 after the V. SAW is generated by integrating the V. DRIVE signal.
The various fundamental wave shapes are shown in Fig. 7.

The various fundamental wave shapes are buffered, inverted in IC2, and are divided into two types of wave shape: one is the original phase, and the other is inverted phase. The two types of wave shape are output to the registration matrix circuit.

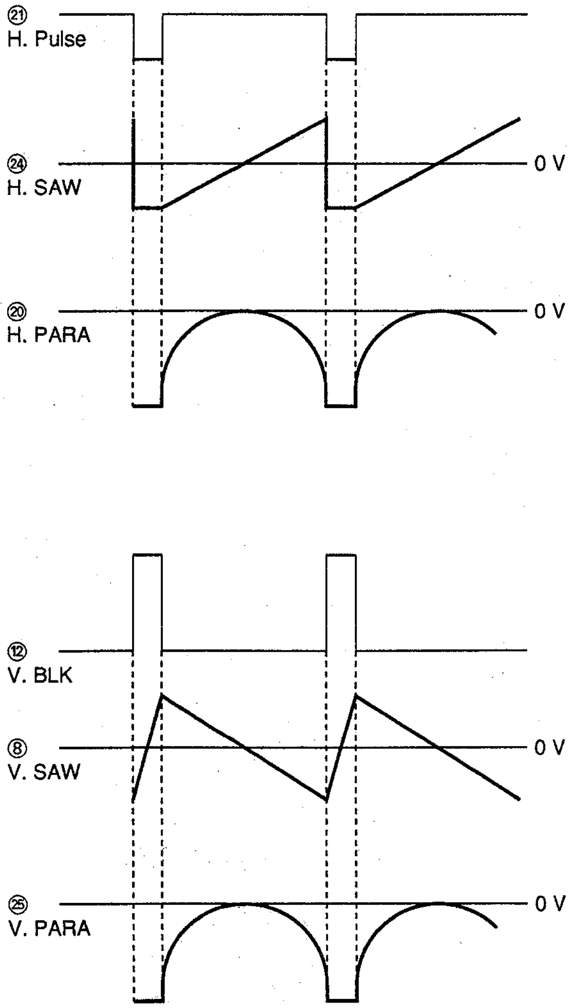


Fig. 7

The registration wave shapes requires not only the various fundamental wave shapes but also the other wave shapes which are generated from the various fundamental wave shapes as described below.
The modulated wave shapes for PIN cushion correction (Fig. 8) are generated by inputting the H. PARA to IC14 pin-5, the V. SAW to pin-7.

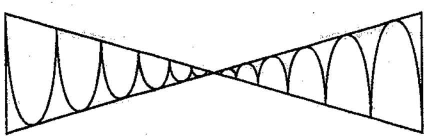


Fig. 8

The modulated wave shapes for KEYS (Fig. 9) are generated by inputting the H. SAW to IC15 pin-5, the V. SAW to pin-7.

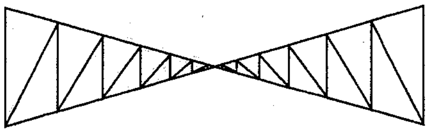


Fig. 9

The main registration wave shapes are described above. In addition to these wave shapes, the KEYS wave shapes are divided at H cycle and V cycle respectively into four wave shapes, which enable precise registration adjustment at each corner independently using the tuner. For this purpose, the KEYS wave shapes generated by IC15, are amplified by IC13, and are divided by IC10. The control signal input to IC10 for dividing the KEYS wave shapes is generated by converting the H. and V. SAY wave shapes into the rectangular wave by IC8.

4. Registration matrix
The registration matrix consists of RV5 – RV51.
The registration wave shapes of positive and negative polarities are connected to both ends of each adjustment VR control respectively. The output signals of these adjustment VR controls are output to the V. MAIN OUT and SUB OUT circuits.

The projectors can be used in the various installations such as attaching to the ceiling, placing on the floor and rear projection type. The deflection systems of the projectors are adjusted to match each of these installation types However, the projectors are designed and shipped from the factory that placing the projectors on the floor is the standard reference installation type.

When the projector is installed other than the standard installation, the connectors of the horizontal defection on the E board are exchanged, or the Vertical MAIN connectors on the D board are exchange. At the same time, the switches S1 – S5 are properly switched. To invert the polarity of the horizontal deflection, change the positions of the switches S1 – S2. To invert the polarity of the vertical deflection, change the positions of the switches S3 – S5. These switches change the polarity of the registration correction wave shapes which are output to the matrix.

5. V. OUT

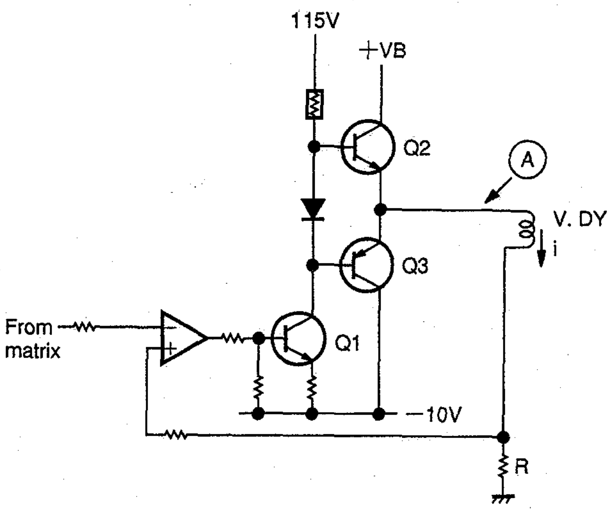


Fig. 10

The fundamental circuit of the V. OUT is shown in Fig. 10. The correction wave shapes are output from the registration matrix and are input to the "–" pin of the operational amplifier.

The operational amplifier receives the V. SAW input signal as shown in Fig. 11. The feedback signal of the operational amplifier has the save wave shape. The V. SAW current as shown flows when the pulse voltage is applied to the point "A" in Fig. 11.

The power supply voltage of +20V or higher is required for the OUT circuit. However, the power supply +VB which is generated by stacking the H. pulses are used for smaller power consumption.

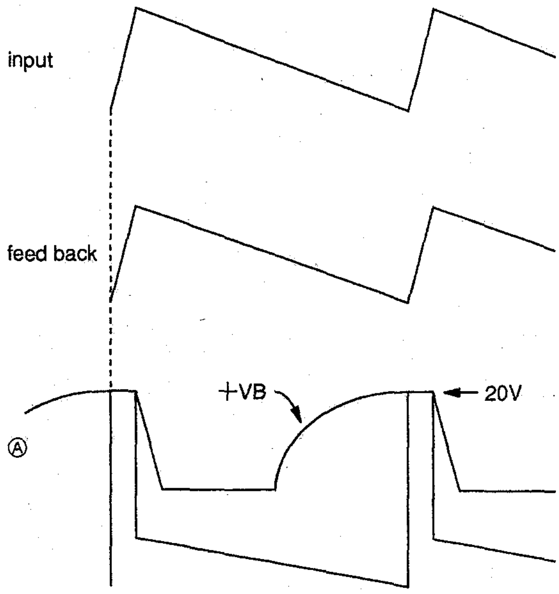


Fig. 11

6. SUB. OUT

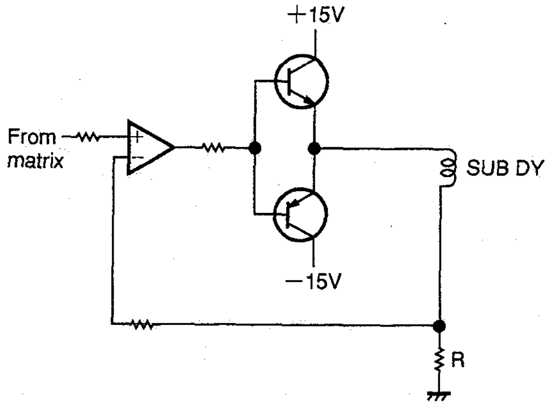


Fig. 12

The SUB OUT circuit shown in Fig. 12.
Operation of the SUB OUT circuit is identical to that of the V. OUT circuit. It consists of the feed back loop which flows the current having the same wave shape is the input signal.
The H. SUB circuit and the V. SUB circuit are mounted on the small board named DB board as a pair.

7. Switching to 16 : 9

Switching the aspect ratio to 16 : 9 is accomplished by reducing the V. SIZE signal. The V. SIZE signal is reduced by decreasing the amplitude of the V. SAW input signal to IC2 when the digital transistor output from Q414/Q413 of the BB board is input to the D board IC12 via pin-18 4:3/$\overline{16:9}$ of the BB board, and via CN306 pins-1 and -2.

3-6. E BOARD

The E board has the horizontal deflection circuit. It consists of the follow blocks.

1. H. Drive
2. PIN MOD
3. H. OUT
4. H. Cent
5. Protector

1. H. Drive

The H. drive pulse is input from the D board to E-8 connector pin-7. The H. drive pulse is then input to Q4 base via R1, D10 and C2. Q4 is the H. drive transistor. Q4 collector is connected to the primary circuit of the H. drive transformer T1. while the secondary winding of T1 is connected to Q1 (H. OUT) base via R12 and D1. Q1 has the function of horizontal switching.

2. PIN MOD

The PIN MOD is the most characteristic circuit in the E board. It employs the switching regulator system which serves to minimize the loss of electric power.

The synthesized correction voltages of the H. SIZE, H. KEY and H. PIN signals are input to the E-5 connector pin-8. The synthesized correction voltages are passed through the low-pass filter of R32 and C21, and are input to IC2 pin-3. IC is a buffer. The output voltage from pin-1 is input to the EB board W-1 pin-2, voltage-divided by R14/R13, and is input to IC1 (µPC1394) pin-14. IC1 is the switching regulator IC. It compares pin-1 voltage with the pin-14 voltage. At the same time, a sawtooth wave shape is generated by R10 and C6 which are connected to pin-11. This sawtooth wave is synchronized with the – H pulse input to pin-10. The input voltage to pin-12 determines the slice level of the sawtooth wave. As the result of IC switching regulator, the pulse having a appropriate duty is output from pin-7. This pulse id the PIN MOD drive pulse. This pulse is buffered by Q9, and is input to Q3 base via R47/C35. Q3 is the PIN MOD drive transistor, driving the HDT2. The secondary winding of the HDT2 is connected to Q2 base. Q2 is the PIN MOD transistor.

Type of switching regulator is the inverting type, operating as described below.

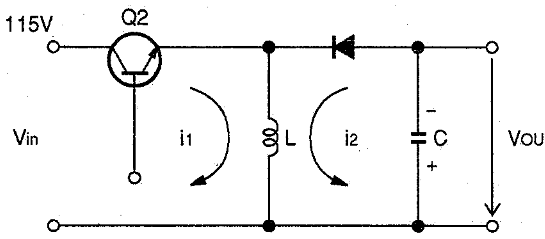


Fig. 13

1. The current il flow through L during ON period of Q2. The current change at this time is as follows:

$$\frac{V_{IN} \cdot T_{ON}}{L}$$

2. During OFF period of Q2, the potential energy accumulated in L is moved to C, so that D is turned on and the current i2 flows. The current changes at this time is as follows:

$$\frac{V_{OUT} \cdot T_{OFF}}{L}$$

3. During normal operating condition, these current changes are of same amount which is:

$$\frac{V_{IN} \cdot T_{ON}}{L} = \frac{V_{OUT} \cdot T_{OFF}}{L}$$

$$\therefore V_{OUT} = \frac{T_{ON}}{T_{OFF}} \cdot V_{IN}$$

In other words, the V. OUT voltage can be controlled by changing the duty of Q2 ON and OFF period.
This voltage is the PIN MOD voltage which is normally –90V to –100V. This PIN MOD voltage is returned to IC2 pin-6 via R34, is amplified. The dc component is this signal is cut by C20 to isolate only the ac components (H. KEY and H. PIN components) which are fed back to the EB board IC1 pin-1. The dc component is fed back to IC1 pin-1 by rectifying the H. pulse output from the secondary winding of HOT (pin-8) using D4/R48/C19.

3. H. OUT

Q1 (2SD1399) is the H. OUT transistor. This transistor has the built-in damper diode. Description on the basic operation of the horizontal defection is omitted. C11 is the resonant capacitor. L5 is the HLC (Horizontal Linearity Coil). L6, L7 and L8 are the HWC (Horizontal Width Coil).

4. H. Cent

The H. Cent circuit is on the EC board. As the identical H. Cent circuit is commonly used in all R. G. and B. circuit, only the blue circuit is described below.
The blue H. Cent control voltage is input to E-5 connector pin-5. This voltage is input to the EC board W-3 pin-1, and is input then to IC1 pin-3.

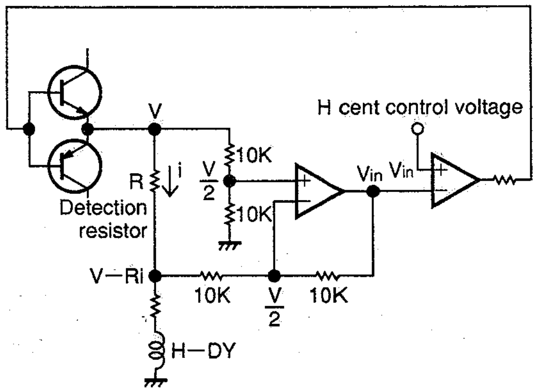


Fig. 14

R7/R8/R9 are the detection resistors. Assuming that the Cent current is i;

$$(V - R_i) - \frac{V}{2} = \frac{V}{2} - V_{IN}$$

$$\therefore R_i = V_{IN}$$

$$\therefore i = \frac{V_{IN}}{R} \quad \text{.... The current is proportional to } V_{IN}\text{.}$$

The H. Cent current can flow in the H. MAIN DY without floating, because the PIN MOD voltage is set to "–" minus.

4. Protector
   1. 115V Line Current Protector
      R2 is the detection resistor. If an excessive current flows in the 115V line, Q5 is turned on. As Q5 is turned on, Q6 base set to high to on Q6 so that the protector line is set to low. Its operating current is:

      $$i = \frac{0.6}{3.3} \fallingdotseq 170\text{mA}$$

   2. 12V Line Shorting Protector
      If the 12V line is shorted, the protector line is set to low by D8 and R44.

   3. H. SIZE Protector
      If the H. SIZE becomes larger, it means that the PIN MOD voltage id decreased, and IC2 pin-7 potential increases. If the potential at IC2 pin-7 increases, the Q6 base is set to high via D6. Q6 is tuned on which set the protector line to low. At the same time, the EB board IC1 pin-5 is set to high by D9 which stops oscillation of the switching regulator.

   4. FAN Protector
      If the fans stop working, the SENS pin goes high which turn on Q7. When Q7 is turned on, the protector line is set to low.

All protectors are connected to the protector line. If the protector line goes low, the protector circuit in the QA board starts operating to turn off the switching power regulator.

3-7. PA, PB, PC BOARDS

The PA, PB and PC boards have the following major circuit blocks.

1. High Tension Generator Circuit
2. High Tension Regulator Circuit
3. High Tension Protector Circuit
4. LOT Circuit
5. Dynamic Focus Circuit
6. G2 Regulator Circuit

1. High Tension Generator Circuit
   The high tension generator circuit is driven by the H. drive pulse The H. drive pulse is input to the PA board from the connector PA-2 pin-9, buffered by the emitter follower Q7, and is input to Q3 base. The transistor Q3 drive the drive transformer T2. The output signal from T2 passes through the connector PA-4 pins-3/-4. It is output from the connector PA-3 pin-5 to the PC board. Through the PC board PC-1 pin-5, the H pulse drives the switching transistor Q1.

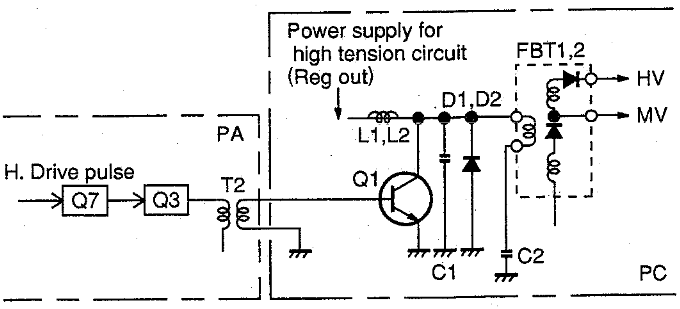


Fig. 15

The basic circuit of the high tension generator circuit is mounted on the PC board. It consists of the flyback transformers FBT1/FBT2, dummy inductor L (L1, L2), resonant capacitor (C1), damper diodes (D1, D2), switching transistor (Q1).
About 1 kV – 1.2 kV pulse (= flyback pulse) is generated at the collector of the switching transistor Q1. Amplitude of this pulse is further amplified by the FBT, is then rectified, and generates the high tension of 33 kV. This flyback pulse has the width of about 12 μseconds. This width is determined by the inductance L, value of the dummy inductance L and capacitance of the resonant capacitor in the primary circuit. Amplitude of the flyback pulse is determined by the above mentioned inductor L, capacitor C, and power supply voltage to the high tension generator power line (Reg. out = PC-1, pin-1). As this projector has the built-in high tension regulator circuit, the amplitude of the flyback pulse is kept constant to about 1 kV at cut-off, or 1.2 kV at high light, even though change of the load (beam current amount) affects the amplitude of the flyback pulse.

Flyback pulse

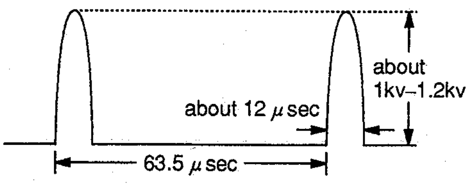


Fig. 16

The high tension HV (33 kV) output from the FBT is input to the HV block (HVB), and is distributed to CRTs of R., G., and B. At the same time, the middle tension voltage (MV) of about 14 kV is output in the middle of the secondary winding of the FBT. The middle tension voltage is output to the focus pack which generates the focus voltage (G4)≒10 kV and the screen voltage (G2)≒1 kV. As this projector is designed fo the high brightness, two FBTs are used in parallel connection.

2. High Tension Regulator Circuit

The voltage level of the HV changes depending upon its load (beam current) normally. This projector flows larger beam current (1k) at high light, the change of the HV adversely affects the picture quality. To maintain the high quality picture at all times, the high tension regulator circuit is built-in which maintains the high tension voltage at a constant level.

The high tension regulation system of this projector is to control the power supply voltage (Reg. out) of the above described high tension generator circuit (as the result, amplitude of the flyback pulse is controlled). The power supply voltage (Reg. out) of the high tension generator circuit is generated by stepping up the +115V (connector PA-1, pin-1) using the switching regulator. The amount of stepping up is determined by the on and off duration of the switching. If on duration of the switching becomes longer, the stepping up voltage goes higher. If on duration of the switching becomes shorter, the stepping up voltage goes lower.

• Switching Regulator Circuit

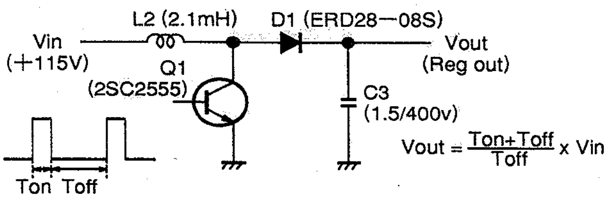


Fig. 17

The high tension voltage is voltage-divided into about 1/4125 using the HBV. The divided output is input to the buffer IC1 (μPC4082 1/2) via the connector PA-4 pin-1. Output from the buffer is again voltage-divided by the high tension adjustment resistors R48 and R49, and is input to the "+" input (pin-1) of the operational amplifier IC1 (μPC1394C) f the switching regulator circuit. The "–" input (pin-14) of the operational amplifier IC1 receives the reference voltage D17 (PA board RD5.1 ESB2) after it is voltage-divided (about 3.0V). The voltage difference between the "+" input (pin-1) and "–" input (pin-14) of the operational amplifier IC1 determines on/off duty factor of the switching pulse (pin-7 output). The switching pulse (pin-7 output) is output from the PB board, buffered by Q14 of the PA board, and is input to the drive conversion circuit Q2/T1 where polarity of the pulse is inverted, and drives the switching transistor Q1. Q1 switches the inductor L2 shown in Fig. 17. Output from L2 is rectified by D1 and C3 so that +115V power is stepped up. If the high tension voltage should increase, and if the voltage of the detector circuit (PB board IC1 pin-1) is higher, on period of Q1 becomes shorter which decreases the Reg. out voltage, and also decreases the amplitude of the flyback pulse. It decreases the high tension voltage. If the high tension voltage should be decreased, the circuit operation which is completely opposite to the above described operation is performed. Thus the negative feedback is always working so that the detected voltage output of the high tension voltage is equal to the reference voltage (about 3.0V).

3. High Tension Protector Circuit

• HV Protector

This is the high tension protector which prevents the high tension block from raising the high tension voltage by some accident. The HV voltage is voltage-divided by R38 and R39 of the high tension block (HVB). The divided output is input to IC2 (μPC392C 1/2) "+" input (pin-3). IC2 received the reference comparison voltage (about 4.8V) at "–" input (pin-2), which is generated by the zener diode (D16, RD5.1 ESB2). If the HV voltage should raise so that the voltage at "+" input exceeds the voltage at "–" input, the protector starts working. Its operating sequence is as follows: Firstly, IC2 (μPC393C 1/2) is turned on which turns on IC2 (μPC393C 2/2) also, via the connector PA-5. It stops oscillation of the HV regulator with D23 (1SS119) first, and turns on the Q10 (2SC2785) which stops oscillation of the HV converter to stop stepping up the HV voltage.

- Σ Ik Protector

This is the CRT protector which protects the CRT from flowing abnormal current by some accident. The current flowing in the secondary winding of the FBT is sampled by the connector PA-3 pin-2 (ABL), converted to the form of voltage by R18 – R23. Q11 is always turned on by the voltage divided by R18 – R23 during normal operation. If any abnormal current flows in the CRT, (the current in the secondary winding of the FBT increases as the result), the input voltage to Q11 decreases which turns off Q11. As Q11 is turned off, IC3 (µPC393 2/2) is turned on which stops oscillation of the HV regulator with D24 (1SS119), and turns of Q9 (2SC2785) which stops oscillation of HV block. The Slk protector is equipped with two identical protector circuits. The other protector circuit works in the same manner of operation in the sequence of Q12 fi D20 fi IC2-2/2.

- OVP (Over Voltage Protector)

This the protector which prevents +B (115V) from raising up abnormally. The +B voltage is divided by the resistors R18/R85/R86/R87/R88/R89, and is input to IC1 (µPC4082 2/2) "+" input (pin-3). The "–" input (pin-2) of IC1 receives the reference voltage (about 4.8V) generated by D18 (RD5.1 ESB2). If +B (115V) increases, IC1 2/2 is turned on which activates the protector in the sequence from D21 fi IC3 2/2.

- Regulator Protector

If the power supply voltage (Reg. out) of the high tension generator circuit increases, this protection stop oscillation of the regulated power supply to protect circuit elements from damage.

The Reg. out voltage is divided by the resistors R24/R25/R26/R27/R67, and is input to IC3 (µPC393C 1/2) "+" input (pin-3). The "–" input (pin-2) of IC3 receives the reference voltage (about 4.8V) generated by D18 (RD5.1 ESB2). If +B (115V) increases, IC1 2/2 is turned on which activates the protector in the sequence from D21 fi IC3 2/2.

4. LOT Circuit

The LOT circuit generates the various power supply voltages using the H. drive pulse and switching pulse. The H. drive pulse input from the connector PA-2 pin-9 drives Q6 (2SD1399) via Q4 and T3. Q6 is the switching transistor which drives T4 (LOT). The various power supply voltages are output from T4.

Dc 230V is output from LOT pin-9 and D7. The dc 230V is supplied to the CB, CG, CR boards where it is used for the power supply of the video out circuit. ±3V dc is output from D8/D9 with reference to pin-4 as the ground potential. ±3V is used as the power supply of the H centering circuit in E board. ±10V dc is output from D10/D13 and pins-5/-12. ±10V is used as the power supply of the V deflection circuit in D board. ±10V is at the same time supplied to the stack-up power supply circuit of C40/C41/D12/D13/C46 so that its output is used as the power supply of retrace period of V deflection. This is called pulse power supply. Pins-2 and -3 output the ac power in the form of pulse which is used as the heater voltage on the CB, CG, CR boards. The effective voltage (across pins-2 and -3) is about 6.3V.

Q5 is the current protector circuit of the LOT circuit. If the loads of respective output voltages of the LOT becomes abnormally heavy, the current flowing in R59 (1.5Ω, 2W: R W) increases which turns on Q5 and Q8. As Q8 is turned on, the PROTECT line is set to low so that the power of the projector is turned off.

5. Dynamic Focus Circuit

The H parabola wave shape (about 3 Vp-p) is input to the non-inverting operational amplifier IC4 (M5218L) from the connector PA-15 pin-1. The H parabola signal is amplified about seven times in IC4, again amplified by T5 (DFT) so that the H parabola signal of about 200V p-p is generated. This output signal is input to the focus pack via PA-14 pin-2 to be mixed with G4 voltage (focus voltage). The focus characteristics in the horizontal direction of the CRT screen is thus improved.

6. G2 Regulator Circuit

The G2 regulator consists of Q13 (2SC3675) and the focus pack. It suppresses a small drift (which the change of white balance) of G2 voltage (screen voltage) due to small leakage current of G4 voltage (focus voltage). The equivalent circuit is shown in Fig. 18. The G2 voltage of the focus pack is determined by R73 (120kΩ ,1/4W) and internal resistance, and is about 1.4 kV.

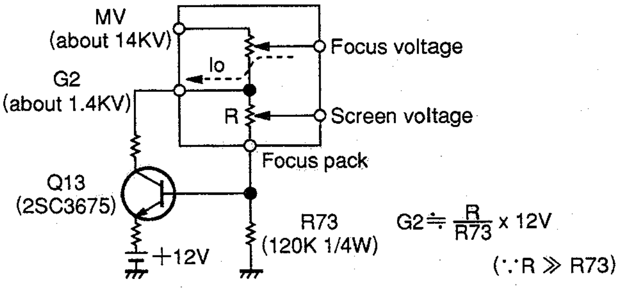


Fig. 18

3-8. QA and QB BOARDS

1. POWER ON/OFF Circuit

When the main power switch of the projector is turned on, 28V is supplied to QA board CN118 pin-2. The 28V is shifted to 12V by IC9, and appears at Q22 emitter. As the main power switch is turned, CN114 pin-5 goes high which turns on Q21 and Q22. Q24 is then turned on so that 12 is output to the power supply board from CN116 pin-7. When the power of the projector is turned off, Q114 pin-5 goes low which turns off Q21 so that 12V is stopped so that the projector power is turned off.

2. TEST Signal Generator Circuit

The test signal is output from QA board IC6 pin-6 while the sync signal is output from pin-7 of the same IC. The test and sync signals are added by R92 and R93 to generate the composite video signal which is output to IC3. The mesh signal is output when IC6 pin-5 is high (5V). The cross-hatch signal is output when IC6 pin-5 is low (0V).

3. Video Signal Switching Circuit

Input Video Signal Selection

The VIDEO signal input to the projector is introduced to QA board IC3 pin-1 while the Y signal input to the S-terminal of the projector is introduced to QA board IC3 pin-2. The control signal is input to IC-3 pins-9 and -10 to select either one of these two input signals. The selected input is output from pin-3. (But in the TEST mode, pin-10 is set to 0V so that pin-3 does not output any signal.) The output signal from pin-3 of IC3 is input again to pins-12 and -15 while the TEST signal is input to pin-14 of the same IC. The control signal is input to pins-9 and -10. The selected signal is output from pin-13 to the BA board via IC3 pins-12 – -14, IC2 pin-13, and CN111 pin-3.

The chroma signal input to the S-terminal of the projector is introduced from J101 pin-4, output to QA board from QB board. The chroma input signal is then output to BA board from CN111 pin-3 via IC4 pins-15 and -2.

The Y and C signal outputs from the QA board Q16 and Q11 are mixed by R82/R83, amplified by Q17, and are output from QA board Q18 to QB board. The mixed signal feeds the J101 connector as the monitor OUT signal.

4. Audio Circuit

The audio input signal at QB board J101 is input to IC301 pin-4. This signal is attenuated in IC301 where degree of attenuation is determined by the control signal from IC202 pin-2. The attenuated signal is output from IC301 pin-3 is input to IC302 pin-1 where it is amplified and is output from IC302 pin-6 to speaker.

5. SIRCS Signal Processing Circuit

The SIRCS input signal at J101 receives wave form shaping by Q208 and Q209. It feeds the two outputs: One signal is output from Q210 to CN103 pin-4 while the other signal is output from Q214 to feed the SIRCS OUT pins. of J101 connector.

The SIRCS IN pins of J101 connector has the stereophonic configuration. From the center tab of the stereophonic SIRCS IN connector, 5V is output. The 5V is supplied from the current limiter of Q207/Q206/Q204/Q205.

6. Protector Circuit

If any abnormality occurs, the main power of the projector is turned off by the protector. If any abnormality occurs, the QA board CN115 pin-6 goes low which is normally open, which turns off Q23, and activates the protector circuit.

7. Component Circuit (in VPH-1044 series only)

The component signals are input to the projector using the RGB input connectors.

The (R-Y) signal is input to R-pin of the QA board J-1 connector. The (Y) signal is input to G-pin. The (B-Y) signal is input to B-pin. The (R-Y) and (B-Y) signals are sent to buffer circuit before feeding the CN112. The (R-Y) signal passes through Q41/Q42/Q43/IC4 pins-1/-15 and output from CN111 pin-3 to the BA board. The (B-Y) signal passes through Q44/Q45/Q46/IC4 pins-3/-4 and output from CN111 pin-9 to the BA board. They are then output from BA board, passing through IC4 and sent to IC8 (CXA-1216P) pin-5, -6, and -7 where they are decoded to R. G. and B. signals.

8. R.G.B. Circuit (in VPH-1044 series only)

The R. G. and B. signals are input to the projector using the 5 BNC connector on the QA board. The R. G. and B. signals are output from the buffer circuit to the BB board via CN112.

3-9. PROTECTOR (PROTECTION CIRCUIT)

1. HV Protector Circuit

This is the high tension protector which prevents the high tension block from raising the high tension voltage by some accident. The HV voltage at the HV protector circuit input pin is output to IC2 pin-3. If the HV voltage IC2 pin-3 becomes higher than the pin-3 voltage, IC2 pin-1 goes high and the protector starts working. Its operating sequence is as follows: As IC2 pin-1 goes high, the high level is input to IC2 pin-5, and is output from IC2 pin-7. As the IC2 pin-7 goes high, the on-current flows through R15 and in Q10 which turns on the Q10 stopping oscillation of the HV converter. The high tension voltage disappears. At the same time the HV regulator control IC is stopped of its oscillation by R1 and D23.

2. Σ Ik Protector Circuit

This is the CRT protector which protects the CRT from flowing abnormal current by some accident. This protector circuit works when the cathode current flowing through the CRT exceeds the reference current. The current flowing in the secondary winding of the FBT is sampled, and is output to the ABL pin the connector PA-3. The S1k protector is equipped with two identical protector circuits: One protector circuit uses the voltage detected by Q11, and the other protector circuit uses the voltage detected by Q12. Q12 is always turned on as the bias current is given during normal operation. If any abnormal current flows in the cathode of the CRT, the Q12 base potential is decreased by the voltage supplied from IC4 pins-15 and -2. As the Q12 base potential is decreased, Q12 is turned off which raises the Q12 collector potential to high. This high level is input to IC2 pin-5 via R53 and D20. This stops oscillation of the HV regulator using the same circuit path as of the HV protector circuit. As Q11 is turned off, the high potential at Q11 collector is input to IC3 pin-5, and is output from IC3 pin-7. The high potential at IC3 pin-7 turns on Q9 via R16, and the horizontal drive pulse disappears. It stops oscillation of HV block, and the high tension voltage disappears. At the same time the HV regulator control IC is stopped of its oscillation by R70 and D24.

3. Power Supply Protection Circuit
(Excess Voltage Limiter)

This protector circuit is located in the switching regulated power supply (TK-15). This protector is activated when +115V power supply voltage becomes higher than the reference voltage. The +B voltage is divided by the resistors R690 and R691, and is detected by Q677. If Q677 base potential becomes higher than D674, Q676 is turned on which stops oscillation of IC671. As the result, the switching regulated power supply stops outputting 115V power.

4. Power Supply Protection Circuit
(Excess Current Limiter)

This protector circuit is located in the switching regulated power supply (TK-15). This protector sets the limit of the current flowing through the +115V regulated power supply. This protector is activated when the current flowing through the +115V regulated power supply becomes larger than the set limit. The primary current flowing in T602 in GA board is detected by T601. The detected current is amplified and rectified to the two times voltage with D671/D672/C672 in the GB board, and is output to IC671 pin-16. At the same time +115V line voltage is divided by R675 and R676, and is output to IC671 pin-15. The accurate power consumption i.e. the current flowing in the regulator is detected by comparing the voltage inputs of pin-16 and pin-15 of IC671.

5. Power Supply Protection Circuit
(Shorted Output Protection Circuit)

This protector circuit is located in the switching regulated power supply (TK-15). If +15V line of the switching regulated power supply is shorted, this protector is activated. Change in the output voltage of +15V line is detected by R653/R654 of GA board, and also detected by R677 of GB board. If the shorted output is detected, Q673, Q674 and Q675 are turned on. As Q675 collected is connected to IC671 pin-4, IC671 stops oscillation. Thus the output of the switching regulated power supply is turned off.

6. Fans Protection Circuit

The fans circuit of this projector has built-in sensor. The collector circuit of the sensor output transistor is kept to low level (-12V) during normal operation. If the fans stop rotation, the collector circuit of the sensor output transistor is set to high level.

The sensors of this type are attached to three fans. The fans located in the top and bottom of the projector are connected to CN105 and CN106. The sensor output signals these two fans are included in the fans circuit, and are connected to Q203 and Q202 respectively via R209 and R207. The base potentials of Q205 and Q206 are biased into low potential level during normal operation. If the fans stop rotation, Q203 or Q202 is turned on. Collector circuit of both Q203 and Q202 are connected to the QA board D16 via CN102 – CN113. If either Q203 or Q202 is turned on, If Q203 or Q202 is turned on, the cathode potential of D16 decreases which turns of Q23. As Q23 is turned off, Q24 is also turned off, and the switching regulator stops supplying the RM12V. As the result, the switching power regulator stops supplying its output power. The other fans located on top of the projector is connected to E board E-9. The sensor output of the fans is connected to Q7 via R45. If the fans stop rotating, Q7 base potential increases which turns on Q7. The collector circuit of Q7 is connected to D19 through the protection circuit input of E7, PA-2, PA-1, CN115. If the fans stop rotating, the protection circuit is activated to turn off the power in the same circuit operation as the other fans protection circuit. Be careful that the fans protection circuits are operating even through the fans connectors are disconnected.

7. HV REG OUT Protection Circuit

This protection activates if the output voltage of the HV regulator exceeds the reference voltage. The output voltage of the HV regulator is voltage-divided by R24, R25, R26 and R27. The divided voltage is output to IC3 pin-3. If the output voltage at pin-3 becomes higher than the reference voltage at pin-2, the output voltage from IC3 pin-1 goes high which stops oscillation of the HV regulator control IC. As the result, the output voltage of the HV regulator is kept to 115V.

This protection is to protect the HV circuit due to malfunction of the HV circuit.

12V PROT.	<5V
−12V PROT.	>−10V
115V OCP	>180mA (E BOARD)
	>400mA (PA BOARD)
115V OVP	<130V
H. V REG. PROT.	>163V
H.V PROT.	>34KV
3V PROT.	<2.7V
−3V PROT.	>−2.3V
H. PIN. PROT.	<−130V
Σ IK PROT.	>3.5mA

Table 6 Protectors operating voltage and current.

SECTION 4
SET-UP ADJUSTMENT

4-1. PROJECTION SYSTEM SETTING

1) Set the distance between the projector and screen as shown below.
   Note :Distance between the screen
   80" ———— 2681 mm
   100" ———— 3301 mm
2) Set the height and angle of the screen as shown below.
   Note :Height of screen
   80" ———— 758 mm
   100" ———— 890 mm
   Degree of screen
   0 degree
3) Set the horizontal level of the screen.
   Note : Horizontal level of the projector and screen
   90 degrees
   - Lens must be pointed toward either east or west.
4) Place the projector on the adjustment table, and fix it. (The adjustment table must be level.)
5) Connect the AC cord.
   Note :Power source voltage
   J ———— 100V (50Hz)
   U/C ———— 120V (60Hz)
   AEP ———— 220V (50Hz)
6) Connect the BNC to LINE IN.
   Note :Video input signal——— Monoscope video signal
   Audio input signal——— Single tone
7) Turn ON the MAIN POWER, and the POWER SW.
8) Press [PAGE] key of the B^2 remote control unit to enter the OSD display mode.

4-2. HORIZONTAL OSCILLATING FREQUENCY ADJUSTMENT

1) Receive NTSC monoscope signal.
2) Short the D board IC1 pin-1 and pin-11 and connect a frequency counter between IC1 pin-10 and ground.
3) Adjust the D board RV2 (H. HOLD LINE) to indicates within the standard value of the frequency counter.
   Standard Value : 15734 Hz ± 50 Hz
4) Remove the short clip frequency counter.
5) Input the monoscope VIDEO SIGNAL to the G terminal of R.G.B.
6) Repeat the steps 2), 3), 4). Steps 3), however, adjust RV 1
   Note :Steps 5) and 6) are required only in the projector having R.G.B. input connectors.

4-3. SUB BRIGHTNESS ADJUSTMENT

1) Input NTSC cross-hatch signal.
2) Set the BRT to 50.
3) Connect an oscilloscope to the BB board TP9 and connect the ground to shield case.
4) Adjust the BB board SUB BRT VR (RV304) so that the black level of the video signal become 2.6V ± 0.05 V p-p.

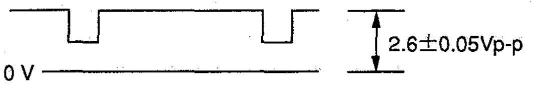


Fig. 1

4-4. GREEN FOCUS ADJUSTMENT

1) Put the lens caps on the RED and BLUE lenses.
2) Move the GREEN SUB lens to its most front position.
3) Rotate the MAIN lens for the optimum FOCUS on the screen.
4) Adjust the GREEN FOCUS VR of the focus pack for optimum focus on the screen.
5) Rotate the MAIN lens for the optimum focus at the center of the screen.
6) Rotate the SUB lens for the optimum focus at the corners of the screen. After adjustment, fix the GREEN SUB lens with the screw.
7) Rotate the MAIN lens again to adjust finely at the center of the screen and fix with the screw.

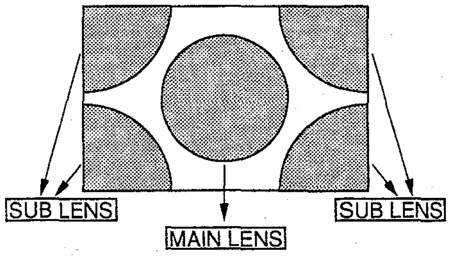


Fig. 2

4-5. RED FOCUS ADJUSTMENT

1) Put the lens caps on the GREEN and BLUE lenses.
2) Adjust the focus in the same manner as the previous section 4-4 GREEN FOCUS ADJUSTMENT.

4-6. BLUE FOCUS ADJUSTMENT

1) Put the lens caps on the RED and GREEN lenses.
2) Move the BLUE SUB lens to its most front position.
3) Rotate the main lens for the optimum focus on the screen.
4) Turn OFF the D board G. RAS and R. RAS switches to obtain the BLUE only.
5) Adjust the BLUE FOCUS VR of the focus pack to view the "+" crossing marks most clearly at the center of the monoscope screen. (Fig. 3)
   (The center of the screen becomes most dark in this condition and become the just-focus picture.)

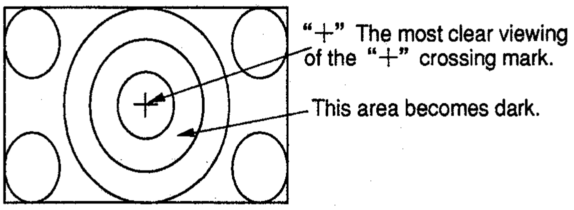

"+" The most clear viewing of the "+" crossing mark.
This area becomes dark.

Fig. 3

6) Turn the VR clockwise slowly and the horizontal black stripes appear and Blank Stripes move vertically. (Fig. 4)

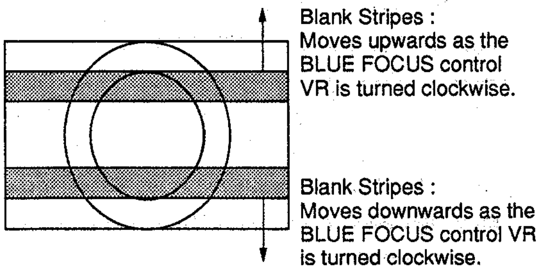

Blank Stripes : Moves upwards as the BLUE FOCUS control VR is turned clockwise.
Blank Stripes : Moves downwards as the BLUE FOCUS control VR is turned clockwise.

Fig. 4

7) Adjust the VR so that the upper-most one column becomes uniformly dark. (Fig. 5)

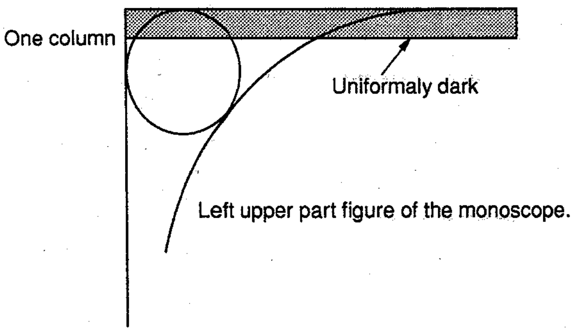

One column
Uniformaly dark
Left upper part figure of the monoscope.

Fig. 5

8) Rotate the MAIN lens for the optimum focus at the center of the screen.
9) Rotate the SUB lens for the optimum focus at the corners of the screen. After adjustment, fix the lens with the screw.
10) Rotate the MAIN lens again to adjust finely at the center of the screen and fix with the screw.

4-7. HATCH SWITCH OPERATION CONFIRMATION

1) Press the TEST SW, and confirm that the monoscope signal and cross-bars signal appear alternately.
2) Set the D board HATCH SW [S8] to the HATCH position, and confirm that the cross-hatch signal appears.

4-8. RED AND BLUE H. CENT AND V. CENT OPERATION CONFIRMATION

1) Press the HA board R. CENT, and display the cross-bars signal on the screen.
2) Press the ↑ ↓ keys, and confirm that the RED horizontal bar moves from minimum to maximum.
3) Press the ← → keys, and confirm that the red vertical bar moves from minimum to maximum.
4) Press the B. CENT, and display the cross-bars signal on the screen.
5) Repeat the steps 2) and 3).
6) RESET the switches.

4-9. CONFIRMATION OF CENT ADJUSTMENT USING EXTERNAL SIGNAL

Note : Input the monoscope video signal to the VIDEO IN.

1) Establish the SYSTEM PRESET using the PAGE key.
2) Select [CENT ADJ] using ↓ key, and select [EXT] using → key.
3) Press first the HA board R. CENT, and then press ↑ ↓ keys. Check that RED horizontal bar moves from minimum to maximum.
   (The monoscope signal will have registration error.)
4) Press ← → keys, and confirm that RED vertical bar moves from minimum to maximum.
5) Press B. CENT, and repeat steps 3) and 4).
6) Change the [CENT ADJ] to [INT] using → key.

4-10. GREEN PICTURE ADJUSTMENT

1) Confirm the switching of the DA board S1 – S7.
   Note : S1 – S5 ——— NORMAL
   S6 ——— 100
   S7 ——— NORMAL
   (Switches S6 to 200/72 when use 80 inches.)
2) Set all the registration adjustment VRs on the D board to their mechanical centers.
3) Set the user's R. CENT and B. CENT to 000.
   Note :Procedure to set the R. CENT and B. CENT to 000.
   Using the B^2 remote control unit, press the keys in the following sequence.
   R. CENT → RESET → B. CENT →
   RESET → B. CENT
4) Receive the monoscope video input signal.
5) Loosen the DY fixing screw and adjust the DY so that the horizontal center line of the monoscope signal and the horizontal lines of the screen are parallel. Then tighten the rotate screw temporarily.
6) Loosen the Neck Assembly fixing screw and rotate the neck so that the center line of the DY agrees with the center line of the GREEN neck assembly. Then tighten the rotate screw temporarily.
7) Rotate the D board H. CENT G [RV 10] and V. CENT G [RV 5] so that the center of the monoscope signal agrees with the center of the screen.
8) Repeat steps 5) and 6). When positions are correctly set, tighten the screws.
9) Set the D board HATCH SW to HATCH position.
10) Set the BRIGHT to its mechanical center and set the PICTURE to its maximum.
11) Turn slightly the FOCUS VR of the focus pack counter-clockwise from the just point to display halation around the hatch luminescent line.
12) Adjust the two-pole magnet so that amount of halation is equal in the right, left, up and down. (Fig. 6)

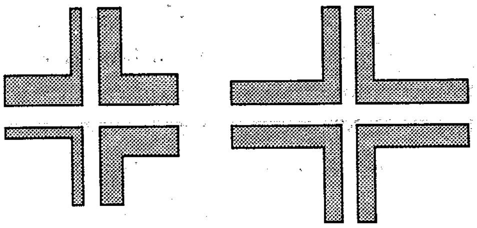

(×) (○)

Fig. 6

13) Set the D board HATCH/DOT [S9] to DOT position.
14) Turn slightly the FOCUS VR of the focus pack clockwise from the just point for easier viewing of dot shape.
15) Adjust the four-pole magnet so that the DOT shape is accurately round. (Fig. 7)

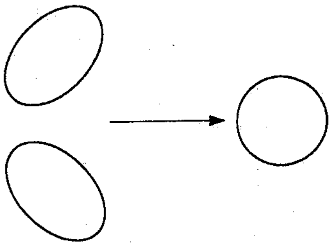

(×) (○)

Fig. 7

16) Repeat the two-pole magnet and four-pole magnet adjustments again and fix then with white paint after adjust.
17) Adjust the D board MAIN H. SIZE [RV11], V. SIZE [RV6] and V. LIN G [RV7] for coarse adjustment of vertical and horizontal sizes.
   Note :NTSC monoscope signal
   H. SIZE —— 16.0 columns
   V. SIZE —— 12.0 rows
18) Adjust the D board PIN CENT [RV4] until the horizontal center line does not move even though the MAIN V. PIN [RV9] is rotated from 0 % to 100 %.
   Note: After adjustment, never adjust PIN CENT [RV4].
19) Adjust the D board MAIN V. PIN [RV9] so that the horizontal lines in top and bottom of the monoscope signal are parallel with the screen display.
20) Adjust the D board V. BOW G [RV8] so that the horizontal center line of the monoscope signal and that of the screen are parallel. Adjust V. CENT G [RV5] again to agree both horizontal centerline.
21) Adjust the D board V. LIN G [RV7] so that the numbers of columns of the monoscope signal are equal above and below the horizontal center line.
   Adjust the D board V. SIZE G [RV6] for 12.0 rows of the monoscope signal.
   Adjust the MAIN V. PIN [RV9] so that the both horizontal lines of the monoscope signal are parallel with the screen frame.
   Adjust the D board H. SKEW G [RV13] and H. CENT G [RV10] so that the vertical center line of the monoscope signal agrees with the vertical center line of the screen.
   Adjust the D board MAIN H. PIN [RV15] so that the

vertical lines in the left and right of the monoscope signal are parallel with the screen frame.
Adjust the D board MAIN H. SIZE [RV11] for 8.0 columns on the right and left sides of the vertical center line respectively of the monoscope signal.

4-11. BLK CONFIRMATION

1) Select the VIDEO mode, and receive the NTSC monoscope signal.
2) Switches the BB board SW201.
3) Check that the amount of blanking is equal in the right, left, top and bottom of screen.

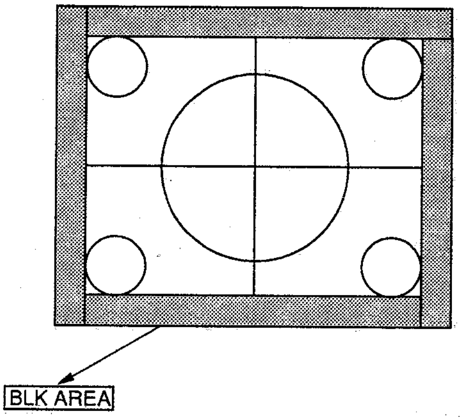


Fig. 8

4-12. RED DY ADJUSTMENT

1) Set the D board BLUE RAS SW [S10] to OFF to display RED and GREEN.
2) Adjust the D board V. CENT R [RV16], V. LIN R [RV 18], H. CENT R [RV25] and H. LIN R [RV27] so that the center of the RED monoscope agrees with the GREEN monoscope center.
3) Establish the TEST mode.
4) Adjust the D board V. BOW R [RV20] so that the horizontal center line of RED becomes straight.
5) Loosen the RED DY screw and rotate the RED DY so that the horizontal center line of the RED monoscope is parallel with the GREEN then tighten the screw.
6) Loosen the RED neck assembly fixing screw and rotate the neck so that the center line of the DY agrees with the center line then tighten the screw.
7) Perform the two-pole magnet and four-pole magnet adjustments in the same manner as section 4-10 GREEN PICTURE ADJUSTMENT.

4-13. BLUE DY ADJUSTMENT

1) Set the D board RED RAS SW [S12] to OFF to display BLUE and GREEN.
2) Adjust the D board V. CENT B [RV34], H. CENT B [RV 43], V. LIN B [RV36] and H. LIN B [RV45] so that center of the monoscope agrees with the GREEN monoscope center.
3) Establish the TEST mode.
4) Adjust the D board V. BOW B [RV38] so that the horizontal center line of BLUE becomes straight.
5) Loosen the BLUE DY screw and rotate the DY so that the horizontal center line of the BLUE monoscope is parallel with GREEN then, tighten the screw.
6) Loosen the BLUE neck assembly fixing screw and rotate the neck so that the center line of the DY agrees with the center line of the BLUE neck assembly then tighten the screw.
7) Perform the two-pole magnet and four-pole magnet adjustments in the same manner as step 8) through step 16) of section 4-10 GREEN PICTURE ADJUSTMENT.

4-14. GREEN – RED VERTICAL REGISTRATION ADJUSTMENT

1) Establish the TEST mode.
2) Set the D board HATCH SW [S8] to cross HATCH position.
3) Set the D board BLUE RAS SW [S10] only to OFF to display RED and GREEN.
4) Adjust the D board V. CENT R [RV 16], V. SKEW R [RV 19] and V. BOW R [RV 20] so that horizontal center line of the RED monoscope agrees with that of GREEN horizontal center line.
5) Adjust the D board V. SIZE R [RV 17] and V. LIN R [RV 18] so that centers of the RED horizontal lines agree with those of GREEN in both top and bottom ends of the screen.

4-15. TILT ADJUSTMENT

1) Adjust the D board [RV21] through [RV24] RED V. TILT 1 – 4 for the maximum tilt correction.
Note :RV21——— 0%
RV22———100%
RV23——— 0%
RV24———100%
2) Set the projector to NORMAL mode.
3) Receive the uniform white signal.

4) Adjust the D board KEYS CENT VR [RV3] so that RED and GREEN retrace lines become invisible on the horizontal center line of the screen.
   Note :After completed KEYS CENT adjustment, never move this VR hear after.
5) Adjust the D board [RV21] through [RV24] (V. TILT VR) to their mechanical center.

4-16. GREEN – RED HORIZONTAL REGISTRATION ADJUSTMENT

1) Establish the TEST mode.
2) Adjust the D board H. BOW R [RV 29] so that the vertical center line of the RED monoscope becomes straight.
3) Adjust the D board H. SKEW R [RV 28] so that the vertical center line of the RED monoscope is parallel with that of GREEN vertical center line.
4) Adjust the D board H. CENT R [RV 25] so that the vertical center lines of RED and GREEN agree.
5) Adjust the E board H. SIZE R [L6] and the D board H. LIN R [RV 27] so that centers of the RED vertical lines agree with those of GREEN in both right and left ends of the screen.

4-17. GREEN – RED TILT ADJUSTMENT

1) Set the D board BLUE RAS SW [S10] to OFF to display RED and GREEN.
2) Adjust the D board [RV21] through [RV24] RED V. TILT VR so that the RED horizontal lines agree with those of GREEN at the corners of the screen.
3) Adjust the D board [RV30] through [RV33] RED H. TILT VR so that the RED vertical lines agree with those of GREEN at the corners of the screen.

4-18. GREEN – BLUE VERTICAL REGISTRATION ADJUSTMENT

1) Establish the TEST mode.
2) Adjust the D board V. CENT B [RV34], V. SKEW B [RV37] and V. BOW B [RV 38] so that horizontal center line of the BLUE monoscope agrees with that of GREEN horizontal center line.
3) Adjust the D board V. SIZE B [RV35] and V. LIN B [RV36] so that centers of the BLUE horizontal lines agree with those of GREEN in both top and bottom ends of the screen.

4-19. GREEN – BLUE HORIZONTAL REGISTRATION ADJUSTMENT

1) Adjust the D board H. BOW B [RV 47] so that the vertical center line of the BLUE monoscope becomes straight.
2) Adjust the D board RV37 (H. SKEW B) so that the vertical center line of the BLUE monoscope is parallel with that of GREEN vertical center line.
3) Adjust the D board H. CENT B [RV 43] so that the vertical center lines of BLUE and GREEN agree.
4) Adjust the E board H. SIZE B [L8] and the D board H. LIN B [RV 45] so that centers of the BLUE vertical lines agree with those of GREEN in both right and left ends of the screen.

4-20. GREEN – BLUE TILT ADJUSTMENT

1) Adjust the D board [RV39] through [RV42] BLUE V. TILT VR so that the BLUE horizontal lines agree with those of GREEN at the corners of the screen.
2) Adjust the D board [RV48] through [RV51] H. TILT VR so that the BLUE vertical lines agree with those of GREEN at the corners of the screen.

4-21. 16:9 ASPECT RATIO CONFIRMATION

1) Input the monoscope signal.
2) Press R. POWER ON key of the remote control unit. Press then ↓ key not later than three seconds, and also press PAGE key not later than three seconds.
   Note :Size of the display must have the aspect ratio as shown in below.

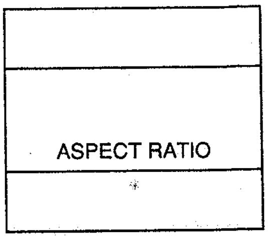


Fig. 9

3) When the aspect ratio 4:3 is displayed, press → key or ← key and confirm that the aspect ratio changes.
4) Select the aspect 4:3, and press PAGE key. The aspect ratio returns to 4:3.

4-22. WHITE BALANCE ADJUSTMENT

1) Rotate the BB board G. DRIVE VR [RV2] and B. DRIVE VR [RV3] to 100 % positions as viewed from the component side and rotate R. DRIVE VR [RV 1] to about 80 % positions.
   Note : Color temperature of white balance adjustment
   - 6500° K 8 MPCD

   [This value is based on white board so itwill show slightly BLUE on screen.]
2) Measure the connector pin-5 then adjust the BB board R DRIVE VR [RV1] with viewing the waveform of CR4 connector pin-5 to the amplitude value to must be 0.6 times.
   (If the R DRIVE VR [RV1] is adjusted, the GREEN signal amplitude changes and as they interacts each other, repeat the RED signal adjustment and GREEN signal measurement until they stabilize.)
3) Input the NTSC uniform white video signal.
4) Set the focus pack G2 VR, CONTRAST and BRIGHT adjustments to their centers.
   (To set the CONTRAST and BRIGHT adjustments to their centers, use the B^2 remote control, and press SWITCHER 4 key.)
5) Adjust the G2 VR to the point where 20 IRE is cut-off, and 30 IRE dimly illuminates.
6) Set the BRIGHT to the minimum.
   To set the BRIGHT adjustment to the minimum, use the B2 remote control, and press SWITCHER 1 key and then BRT− key.
7) Press the B^2 remote control SWITCHER 3 key to establish the OSD OFF mode.
8) Adjust the RED G2 and BLUE G2 VR adjustments to adjust the white balance at cut-off.
9) Set the CONTRAST and BRIGHT controls to the maximum.
   To set the CONTRAST and BRIGHT adjustments to the maximum, press the B^2 remote control SWITCHER 1 key and then CONTR+ key, and also press SWITCHER 1 key and then BRT+ key
10) Adjust the BB board R. DRIVE VR [RV1] so that the GREEN LED of the adjustment tool turns on.
11) Set the CONTRAST BRT and BRIGHT controls to the minimum.
    To set the CONTRAST BRT and BRIGHT adjustments to the minimum, press the B^2 remote control SWITCHER 1 key and then CONTR− key, and also press SWITCHER 1 key and then BRT− key
12) Repeat above steps 8) through 11) until white balance is established.
13) When the white balance adjustment is completed, press the B^2 remote control PAGE key to cancel the OSD OFF mode.

SECTION 5
SAFETY RELATED ADJUSTMENT

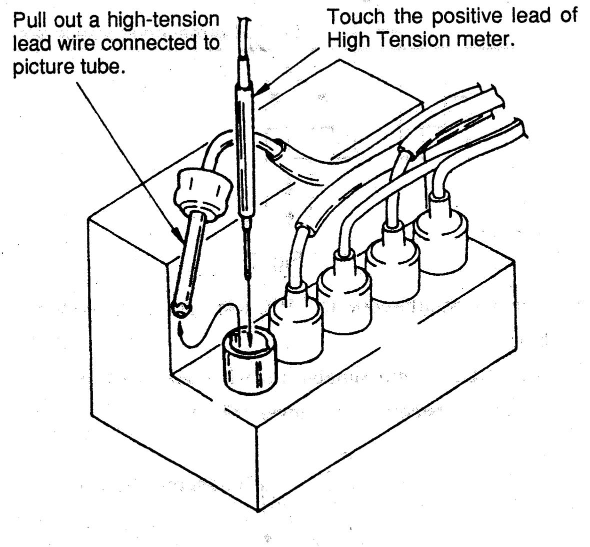
5-1. PA AND PC BOARDS ADJUSTMENT

If the parts described below are replaced, check the HV Hold-Down circuit, High Tension Voltage Regulator circuit, Beam Current Protection circuit and O.V.P. circuit.

⊠ R38, R39 ·····HV Hold-Down
◪ R15, R35, R37, R38, R39, R40, R41, R42, R43, R44, C30, D16, D22, Q10, IC2, Mounted PA board
⊠ R48, R49 ·····High Tension Voltage Regulation
◪ R31, R32, R33, R34, R46, R47, R48, R49, R82, R83, R84, C3, C39, C56, L2, D17, Q14, IC1, Mounted PA board
R3, R4, R7, R14, IC1, Mounted PB board
⊠ R23··········Beam Current Protection circuit
◪ R16, R18, R19, R20, R21, R22, R23, R50, R51, R52, R53, R69, D15, D20, Q9, Q11, Q12, IC3, Mounted PA board
⊠ R88, R89 ·····O.V.P. circuit check
◪ R18, R85, R86, R87, R88, R89, IC1, D18, Mounted PA board
Others·····HVR, FBT1, FBT2, L1, L2, C1, C2

[⊠ R38, R39 HV Hold-Down Adjustment]

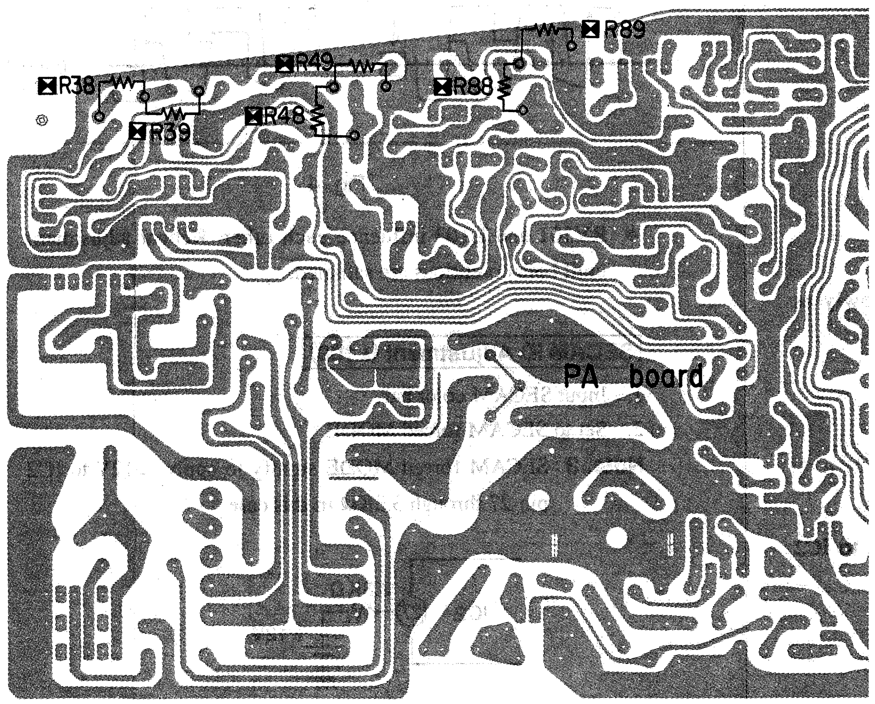
1. Check that the power switch of the projector is turned" OFF".
2. Remove the red colored anode lead from the dc high tension block. Connect the "+" lead of a high tension voltmeter to the dc high tension block. Connect the "−" lead of a high tension voltmeter to chassis-GND of CRT.


Pull out a high-tension lead wire connected to picture tube.
Touch the positive lead of High Tension meter.

3. Input a monoscope signal. Set the PICTURE and BRIGHT controls to the maximum.
4. Turn on the power (120 V AC).
5. Check that the HV Hold-Down circuit is activated and raster disappears when the high tension voltmeter reading is 34.30 kV or less.

[⊠ R48, R49 High Tension Voltage Regulator Adjustment]

1. Check that the power switch of the projector is turned "OFF".
2. Remove the red colored anode lead from the dc high tension block. Connect the "+" lead of a high tension voltmeter to the dc high tension block. Connect the "−" lead of a high tension voltmeter to chassis-GND of CRT.
3. Input a monoscope signal. Set the PICTURE and BRIGHT controls to the maximum. Turn on the power (120 V AC).
4. Set the user's control R. G. B. RASTER switches of the projector to "OFF". Adjust R. G. B. controls of G2 VR (focus pack) to the minimum.
5. Check that the high tension voltmeter indicates 33.30 kV or less when the power switch is turned ON.



[⊠ R88, R89

1. Input the
   PICTURE
2. Turn on t
3. Connect a
4. Adjust t
   supply li
   circuit, an
5. If the a
   resistanc
   adjustme

SECTION 5
SAFETY RELATED ADJUSTMENT

5-1. PA AND PC BOARDS ADJUSTMENT

If the parts described below are replaced, check the HV Hold-Down circuit, High Tension Voltage Regulator circuit, Beam Current Protection circuit and O.V.P. circuit.

⧓ R38, R39 ·····HV Hold-Down
◪ R15, R35, R37, R38, R39, R40, R41, R42, R43, R44, C30, D16, D22, Q10, IC2, Mounted PA board
⧓ R48, R49 ·····High Tension Voltage Regulation
◪ R31, R32, R33, R34, R46, R47, R48, R49, R82, R83, R84, C3, C39, C56, L2, D17, Q14, IC1, Mounted PA board
R3, R4, R7, R14, IC1, Mounted PB board
⧓ R23··········Beam Current Protection circuit
◪ R16, R18, R19, R20, R21, R22, R23, R50, R51, R52, R53, R69, D15, D20, Q9, Q11, Q12, IC3, Mounted PA board
⧓ R88, R89 ·····O.V.P. circuit check
◪ R18, R85, R86, R87, R88, R89, IC1, D18, Mounted PA board
Others·····HVR, FBT1, FBT2, L1, L2, C1, C2

[⧓ R38, R39 HV Hold-Down Adjustment]

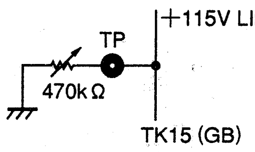
1. Check that the power switch of the projector is turned“ OFF”.
2. Remove the red colored anode lead from the dc high tension block. Connect the “+” lead of a high tension voltmeter to the dc high tension block. Connect the “−” lead of a high tension voltmeter to chassis-GND of CRT.
3. Input a monoscope signal. Set the PICTURE and BRIGHT controls to the maximum.
4. Turn on the power (120 V AC).
5. Check that the HV Hold-Down circuit is activated and raster disappears when the high tension voltmeter reading is 34.30 kV or less.

[⧓ R48, R49 High Tension Voltage Regulator Adjustment]

1. Check that the power switch of the projector is turned “OFF”.
2. Remove the red colored anode lead from the dc high tension block. Connect the “+” lead of a high tension voltmeter to the dc high tension block. Connect the “−” lead of a high tension voltmeter to chassis-GND of CRT.
3. Input a monoscope signal. Set the PICTURE and BRIGHT controls to the maximum. Turn on the power (120 V AC).
4. Set the user’s control R. G. B. RASTER switches of the projector to “OFF”. Adjust R. G. B. controls of G2 VR (focus pack) to the minimum.
5. Check that the high tension voltmeter indicates 33.30 kV or less when the power switch is turned ON.

[⧓ R88, R89 O.V.P. Adjustment]

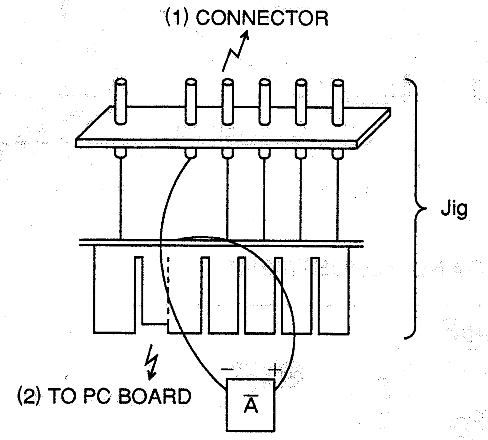
1. Input the monoscope signal from the signal generator. Set the PICTURE and BRIGHT controls to the maximum.
2. Turn on the power (120 V AC).
3. Connect a variable resistor 470 kΩ across TP and ground.
4. Adjust the connected variable resistor so that B+ power supply line becomes 125V or less which activates the O.V.P. circuit, and raster disappears.

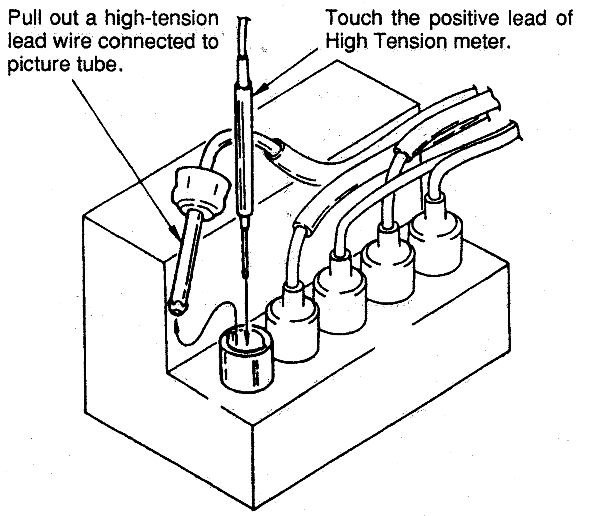


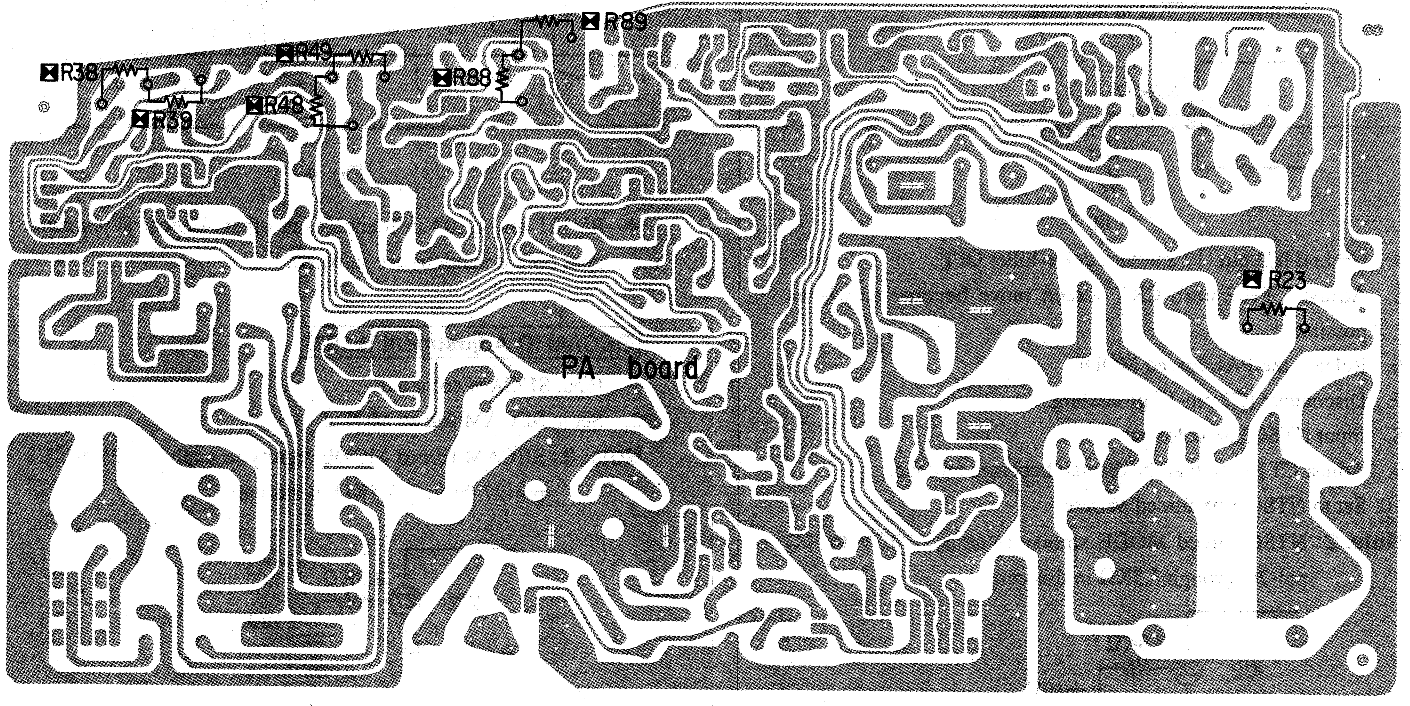
5. If the above conditions cannot be obtained, change the resistance values of R88 and R89, and repeat the step 4 adjustment.

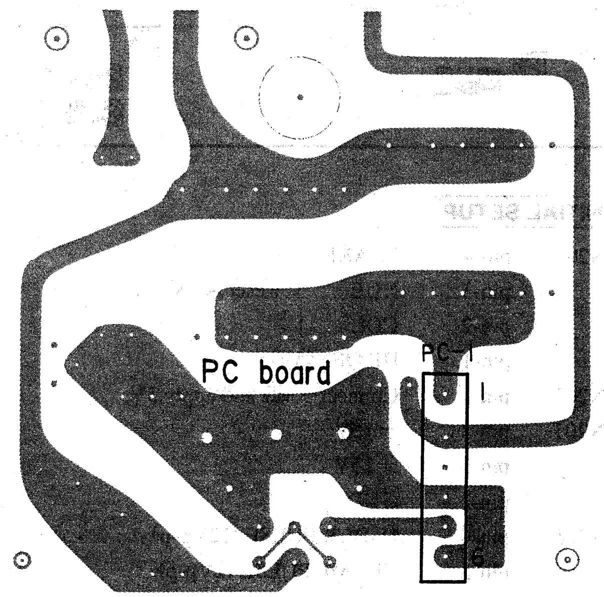
[⧓ R23 Beam Current Protection Circuit. Adjustment]

1. Check that the power switch of the projector is turned “OFF”.
2. Remove the red colored anode lead from the dc high tension block. Connect the “+” lead of a high tension voltmeter to the dc high tension block. Connect the “−” lead of a high tension voltmeter to chassis-GND of CRT.
3. Attach a tool to the PC-1 connector, and connect an ammeter.
4. Check that the protector circuit is activated, and raster disappears when the ABL current is decreased to 3500μA or less as the PICTURE, BRIGHT and R.G.B. screen voltage controls (focus pack) are turned.



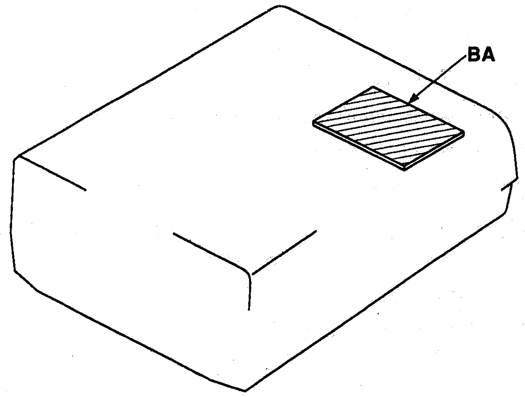

Pull out a high-tension lead wire connected to picture tube.
Touch the positive lead of High Tension meter.



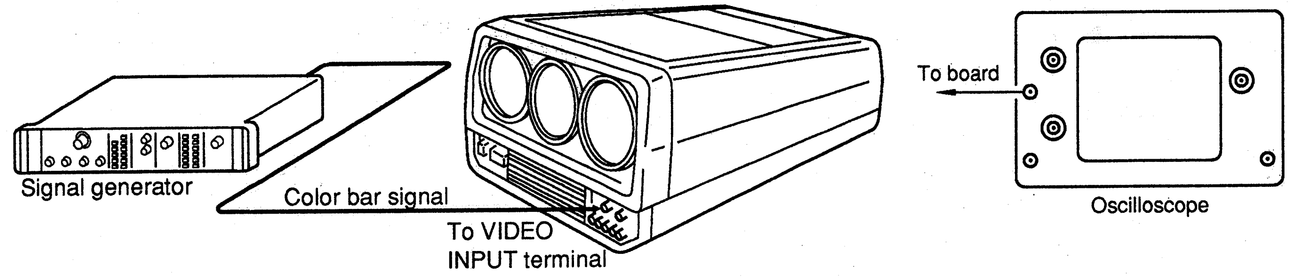


SECTION 6
CIRCUIT ADJUSTMENT

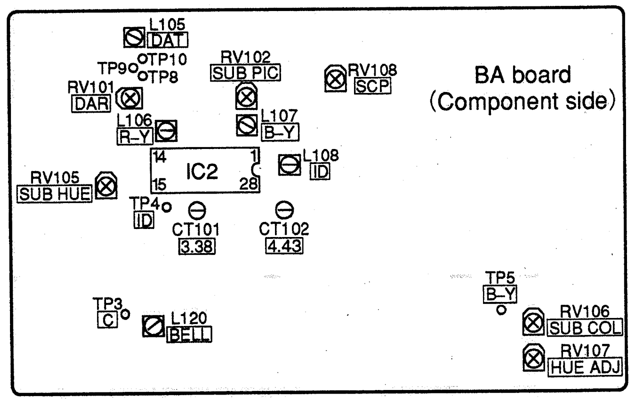
Note :
Fit DY (deflection yoke) tightly to picture tube when conducting basic adjustment, electric adjustment or exchanging picture tube.



CONNECTION


Signal generator
Color bar signal
To VIDEO INPUT terminal
To board
Oscilloscope

6-1. BA BOARD ADJUSTMENT


L105
DAT
TP10
TP9
TP8
RV102
SUB PIC
RV108
SCP
RV101
DAR
L106
R–Y
L107
B–Y
IC2
14
1
15
28
L108
ID
RV105
SUB HUE
TP4
ID
CT101
3.38
CT102
4.43
BA board
(Component side)
TP5
B–Y
TP3
C
L120
BELL
RV106
SUB COL
RV107
HUE ADJ

INITIAL SETUP

CN206	pin-4	SHARP	Reset (4.5V)
	pin-3	HUE	
	pin-2	COL	
	pin-1	DP OFF (5V)	
CN203	pin-1	Connect 10kΩ and apply 5V.	
CN201	pin-3	−15V	
	pin-1	+15V	
	pin-2	GND	
CN205	pin-4	H. BLK PULSE (12Vp-p)	
	pin-5	CLAMP PULSE (2Vp-p)	
CN207	pin-7	Connect 10kΩ and apply 5V	

REF. OSC Adjustment (CT101, CT102)

1. Input PAL color bar.
2. Adjust CT102 so that the display becomes colored.
3. Set PAL forced MODE.

Note. 1 : PAL forced MODE signify to apply +12V to IC2 pin-28 through 3.3KΩ in this case.

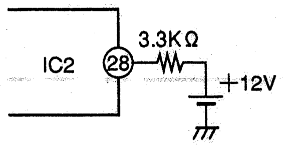

IC2
28
3.3KΩ
+12V

Fig. 1

4. Ground IC2 pin -17 and turn color-killer OFF.
5. Adjust CT102 until CRT screen move become slowly as possible.
6. Release the PAL forced MODE.
7. Disconnect IC2 pin-17 grounding.
8. Input NTSC3.58 color bar.
9. Adjust CT101 so that the display becomes colored.
10. Set to NTSC 3.58 forced MODE.

Note. 2 : NTSC forced MODE signify to apply +12V to IC2 pin-26 through 3.3KΩ in this case.

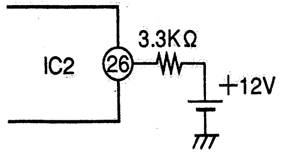
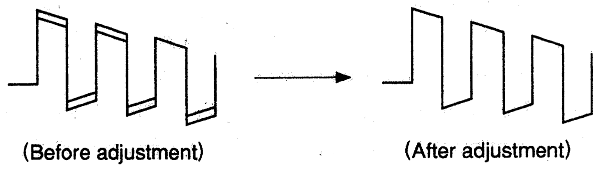

IC2
26
3.3KΩ
+12V

Fig. 2

11. Ground IC2 pin-17 and turn color-killer OFF.
12. Adjust CT101 until CRT screen move slowly as possible.
13. Release the NTSC 3.58 forced MODE.
14. Disconnect IC2 pin-17 grounding.

1H DELAY LINE Adjustment (L105, RV101)

1. Input PAL color bar.
2. Set to PAL forced MODE.
3. Connect oscilloscope to TP-5 and view the waveform of H block.
4. Adjust L105 and minimize the double outlines of waveform (Fig. 3).



(Before adjustment) (After adjustment)

Fig. 3

5. Exchange the input signal to PAL special color bar signal.
6. Rotate RV101 until the part of ANTI PAL waveform corresponds with the level "0". (Fig. 4)

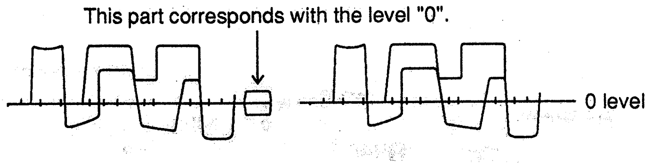

This part corresponds with the level "0".
0 level

Fig. 4

∗ RV101 and L103 influence each other. Repeat adjustment until both conditions are satisfied.

SECAM ID Adjustment (L108)

1. Input SECAM color bar.
2. Set to SECAM forced MODE.

Note. 3 : SECAM forced MODE signify to apply +12V to IC2 pin-27 through 3.3KΩ in this case.

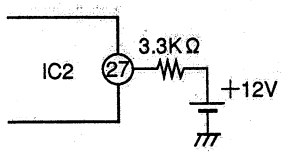
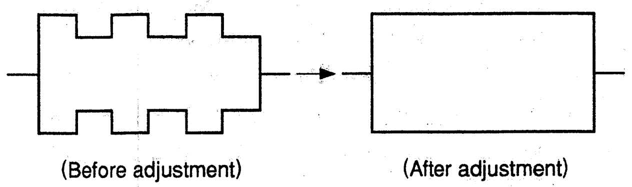

IC2
27
3.3KΩ
+12V

Fig. 5

3. Connect digital multimeter to TP4. (input impedance over 50MΩ)
4. Rotate L108 to the maximum indicates point.

BELL Filter Adjustment (L120)

1. Input SECAM color bar.
2. Set to SECAM forced MODE.
3. Connect oscilloscope to TP3 and view the waveform of H block.
4. Adjust L120 until the waveform become flat. (Fig. 6)



(Before adjustment) (After adjustment)

Fig. 6

∗ Stabilize the tracking of L120 and L108.

SECAM DISCRI Adjustment (L106, L107)

1. Input SECAM color bar.
2. Set to SECAM forced MODE and maximize the color lead.
3. Connect oscilloscope to TP8 and view the waveform of H block.
4. Adjust L106 until suitable for white and black part of TP8 waveform become at 0 – level. (Fig. 7)

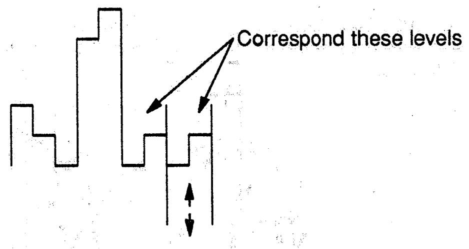

Correspond these levels

Fig. 7

5. Connect oscilloscope to TP10 and view the waveform of H block.
6. Adjust L107 until suitable for white and black part of TP10 waveform become at 0 – level. (Fig. 8)

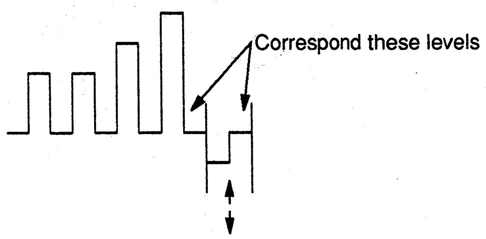

Correspond these levels

Fig. 8

7. Reset the
∗ Maximu

R

8. Confirm
a monito

SUB PICT

1. Input 10
2. Connect
block.
3. Adjust
become

4. Input 10
5. Transfer
6. Confirm
7. Transfer
8. Confirm
9. Transfer

HUE, SU
(RV107,

1. Input PA
2. Connect
block.
3. Adjust
wavefor

11. Ground IC2 pin-17 and turn color-killer OFF.
12. Adjust CT101 until CRT screen move slowly as possible.
13. Release the NTSC 3.58 forced MODE.
14. Disconnect IC2 pin-17 grounding.

1H DELAY LINE Adjustment (L105, RV101)

1. Input PAL color bar.
2. Set to PAL forced MODE.
3. Connect oscilloscope to TP-5 and view the waveform of H block.
4. Adjust L105 and minimize the double outlines of waveform (Fig. 3).

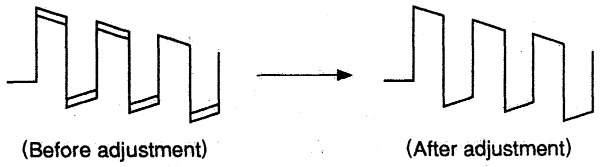


Fig. 3

5. Exchange the input signal to PAL special color bar signal.
6. Rotate RV101 until the part of ANTI PAL waveform corresponds with the level "0". (Fig. 4)

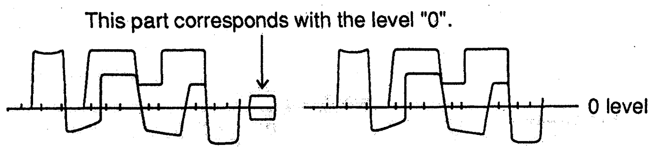


Fig. 4

* RV101 and L103 influence each other. Repeat adjustment until both conditions are satisfied.

SECAM ID Adjustment (L108)

1. Input SECAM color bar.
2. Set to SECAM forced MODE.

Note. 3 : SECAM forced MODE signify to apply +12V to IC2 pin-27 through 3.3KΩ in this case.

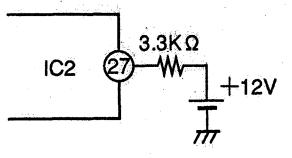


Fig. 5

3. Connect digital multimeter to TP4. (input impedance over 50MΩ)
4. Rotate L108 to the maximum indicates point.

BELL Filter Adjustment (L120)

1. Input SECAM color bar.
2. Set to SECAM forced MODE.
3. Connect oscilloscope to TP3 and view the waveform of H block.
4. Adjust L120 until the waveform become flat. (Fig. 6)

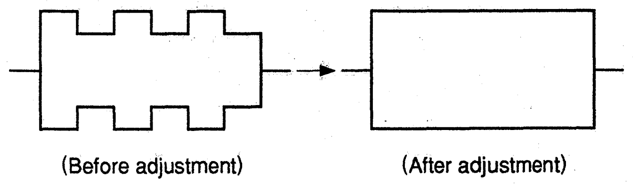


Fig. 6

* Stabilize the tracking of L120 and L108.

SECAM DISCRI Adjustment (L106, L107)

1. Input SECAM color bar.
2. Set to SECAM forced MODE and maximize the color lead.
3. Connect oscilloscope to TP8 and view the waveform of H block.
4. Adjust L106 until suitable for white and black part of TP8 waveform become at 0 – level. (Fig. 7)

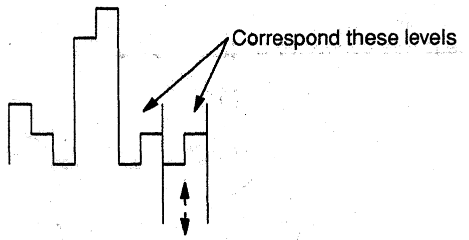


Fig. 7

5. Connect oscilloscope to TP10 and view the waveform of H block.
6. Adjust L107 until suitable for white and black part of TP10 waveform become at 0 – level. (Fig. 8)

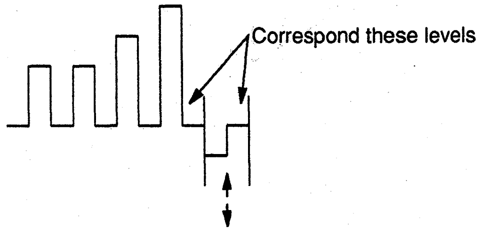


Fig. 8

7. Reset the color level.

* Maximum color level → CN206 connector.
pin-4 −8.5V
RESET pin-4 ······4.5V

8. Confirm that white and black part has not colored with using a monitor.

SUB PICTURE Adjustment (RV102)

1. Input 100 IRE uniform white signal. (with burst)
2. Connect oscilloscope to TP9 and view the waveform of H block.
3. Adjust RV102 so that the amplitude from pedestal to peak become 0.7– 0.75Vp-p. (Fig. 9)

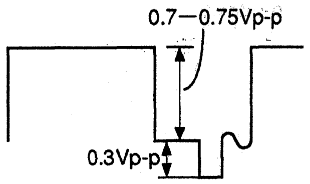


Fig. 9

4. Input 101RE uniform white signal. (with burst)
5. Transfer the voltage of CN206 pin-1 to 5V.
6. Confirm the level keeps within 0.068Vp-p±0.01Vp-p.
7. Transfer the voltage of CN206 pin-1 to 0V.
8. Confirm the level becomes 0V±0.1Vp-p.
9. Transfer the voltage of CN206 pin-1 to 5V.

HUE, SUB COLOR, SUB HUE Adjustment (RV107, RV106, RV105)

1. Input PAL color bar signal.
2. Connect oscilloscope to TP10 and view the waveform of H block.
3. Adjust RV107 (HUE ADJ) and RV106 (SUB COL) until the waveform become flat. (Fig. 10)

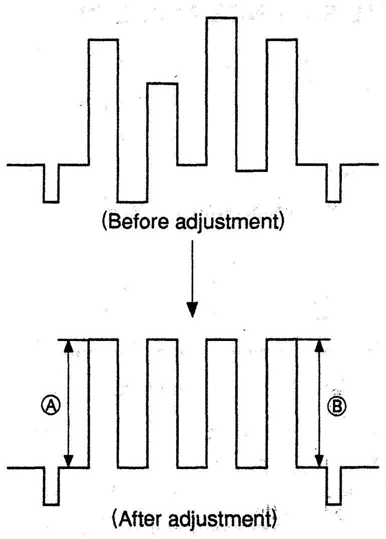


Fig. 10

4. Confirm the level of Ⓑ is ±0.05.V confirm with the level of Ⓐ in this figure.
5. Exchange the input signal to NTSC color bar.
6. Adjust RV105 (SUB HUE) until the waveform become flat.
7. Confirm the level of Ⓑ is ±0.05V confirm with the level of Ⓐ in this figure.

SHARPNESS CHARACTERISTIC ADJUSTMENT (RV108)

1. Input VIDEO SWEEP signal to CN111 pin ⑤ on BA board.
2. Connect oscilloscope to TP10 and view the waveform of V block.
3. Adjust RV108 to become 4.0dB±1.0dB around 3.1MHz. (Fig. 11)

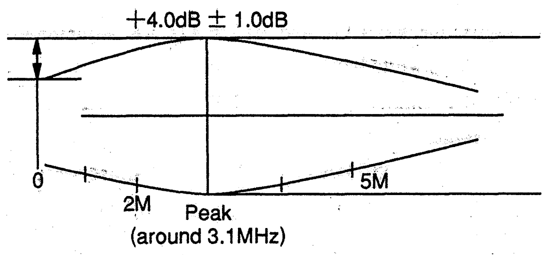
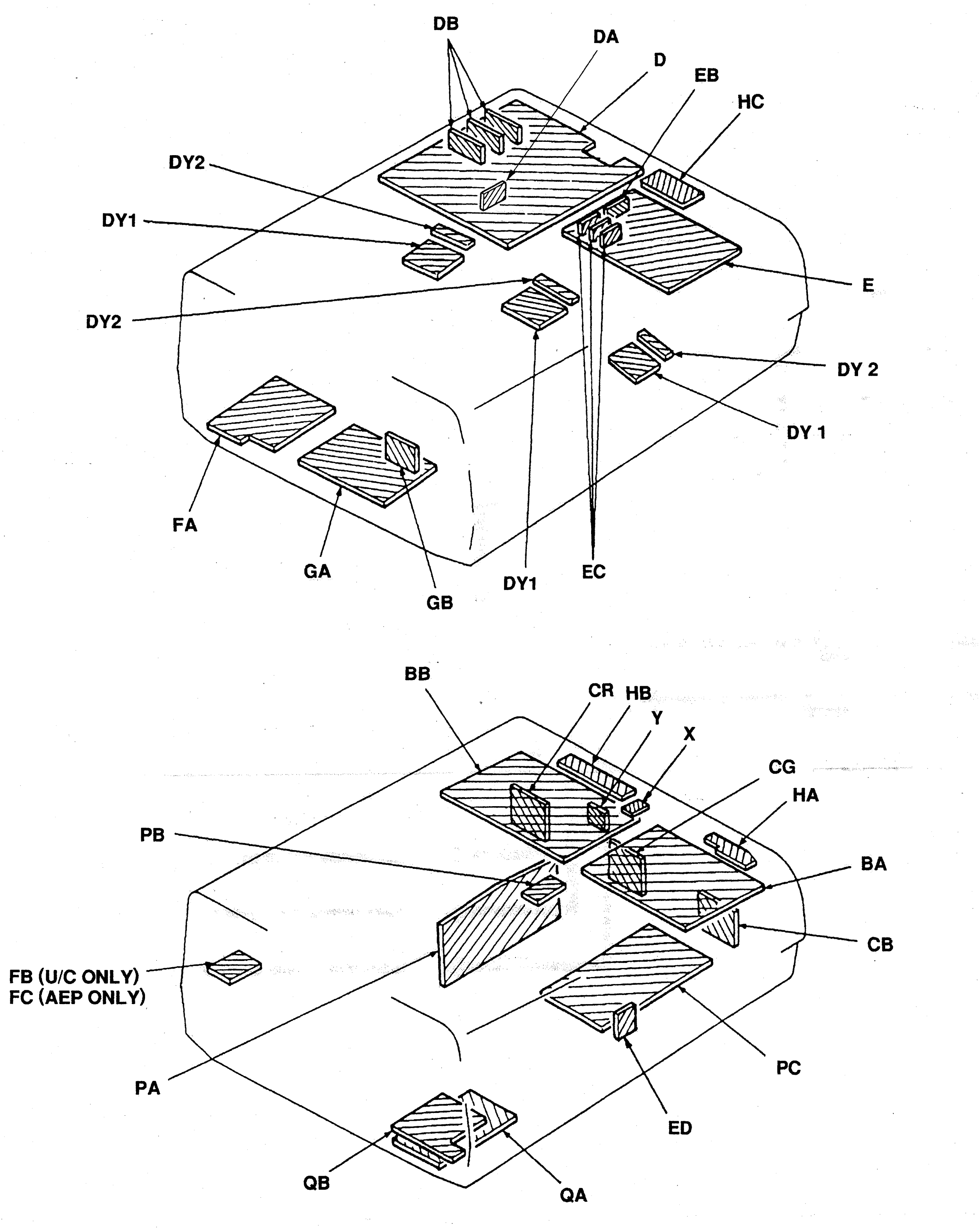


Fig. 11

SECTION 7
DIAGRAMS

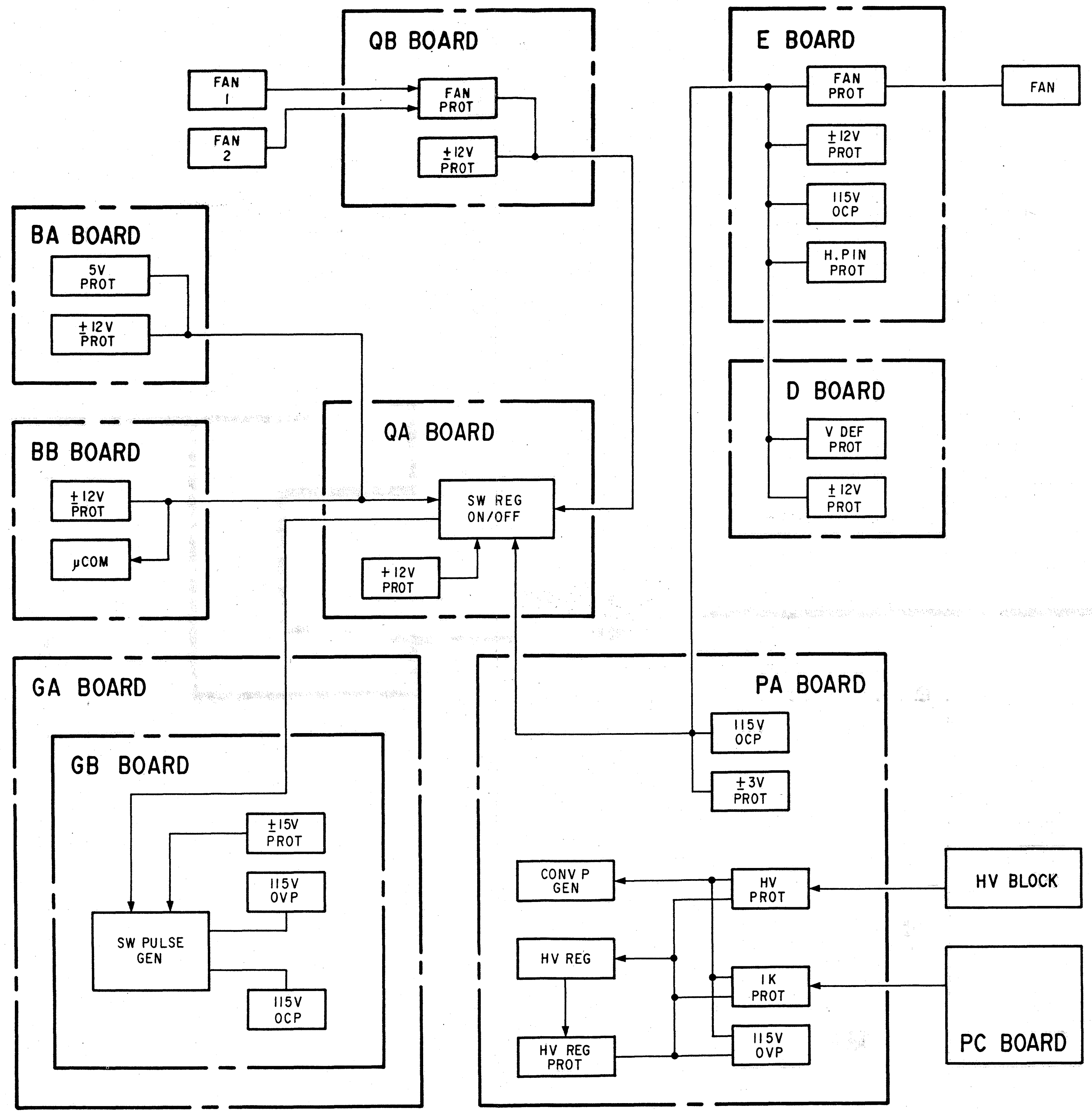
7-1. CIRCUIT BOARDS LOCATION

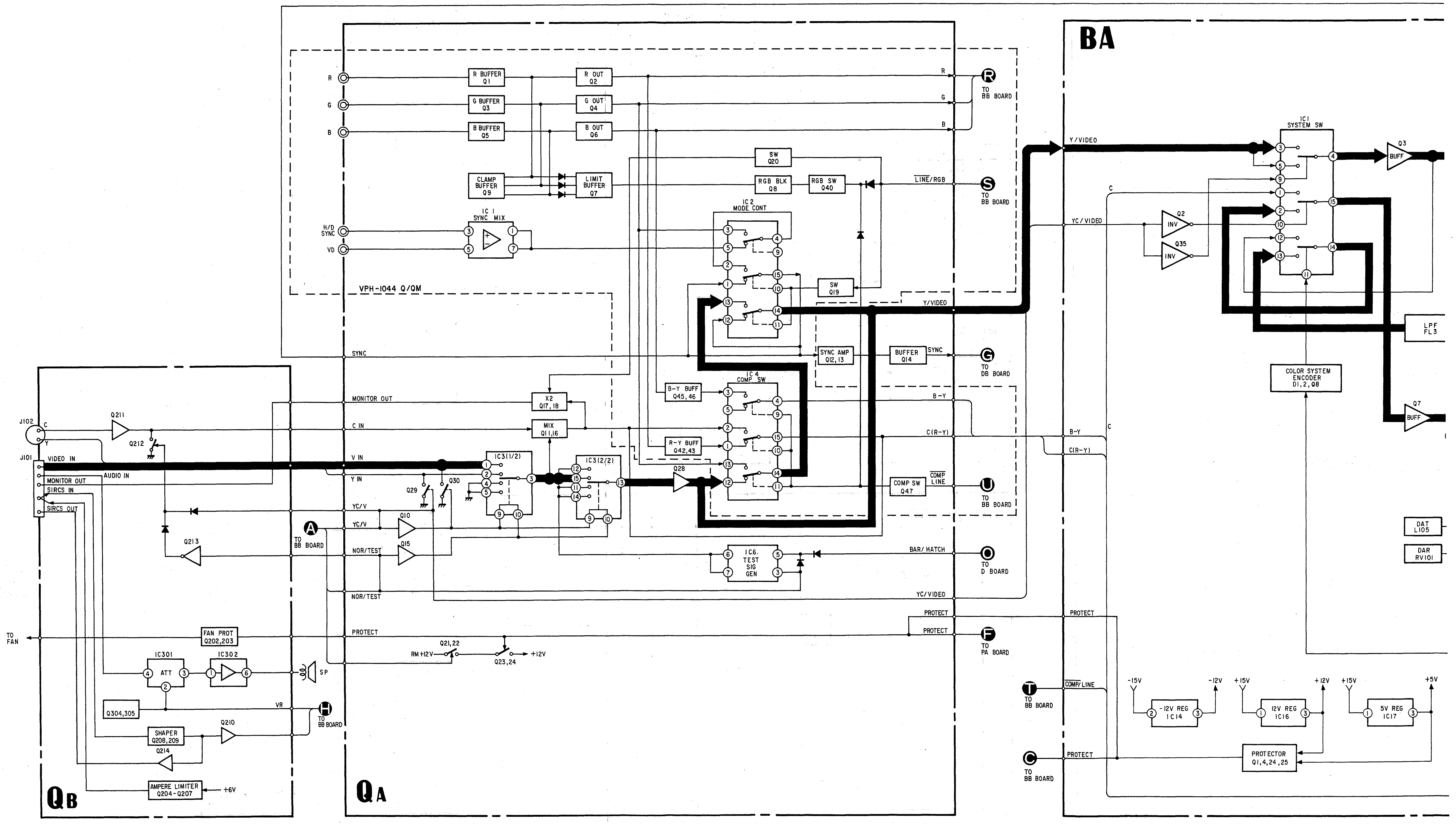

DB
DA
D
EB
HC
DY2
DY1
DY2
E
DY 2
DY 1
FA
GA
GB
DY1
EC
BB
CR
HB
Y
X
CG
HA
PB
BA
CB
FB (U/C ONLY)
FC (AEP ONLY)
PC
PA
ED
QB
QA

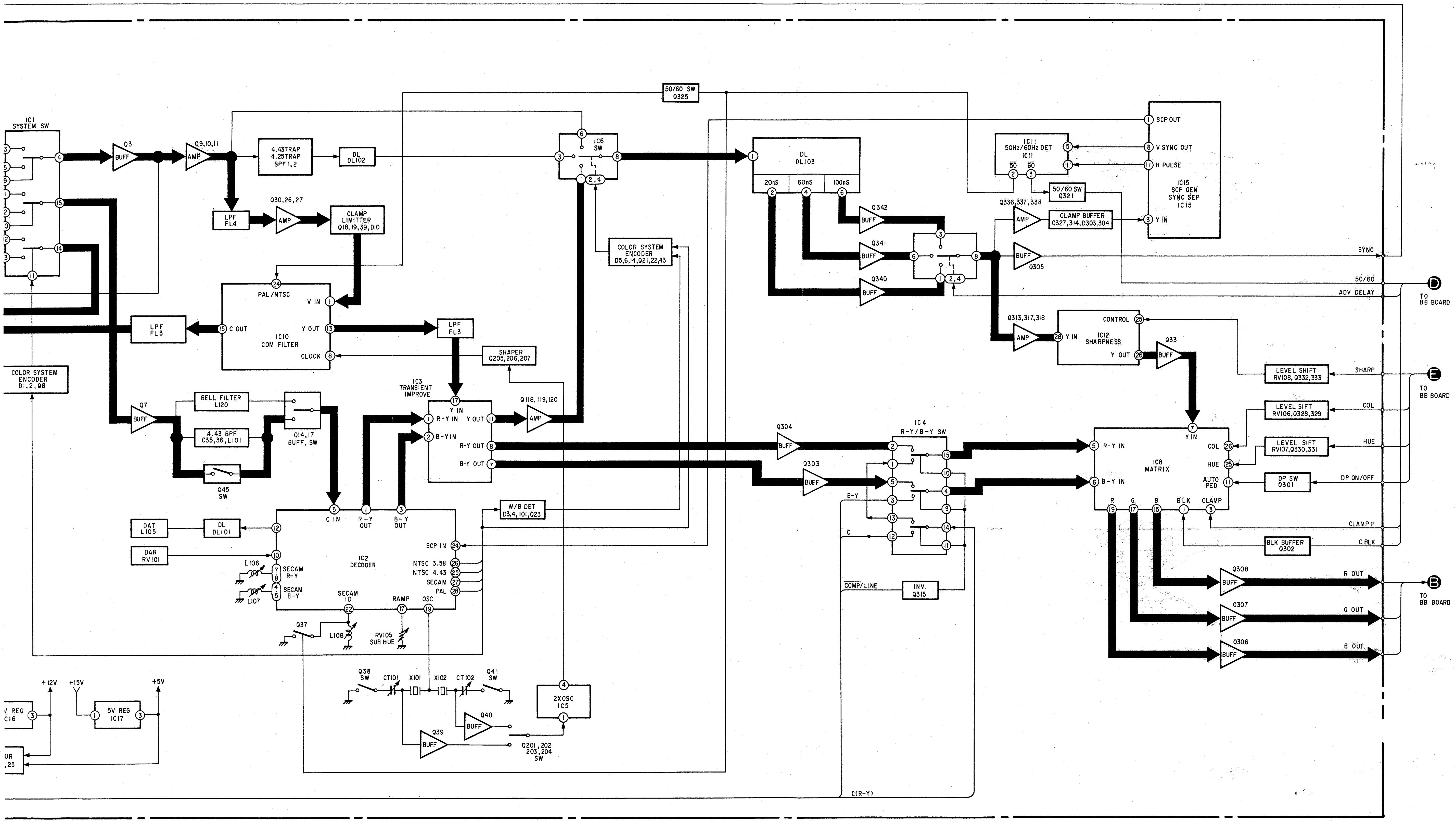
7-2. BL

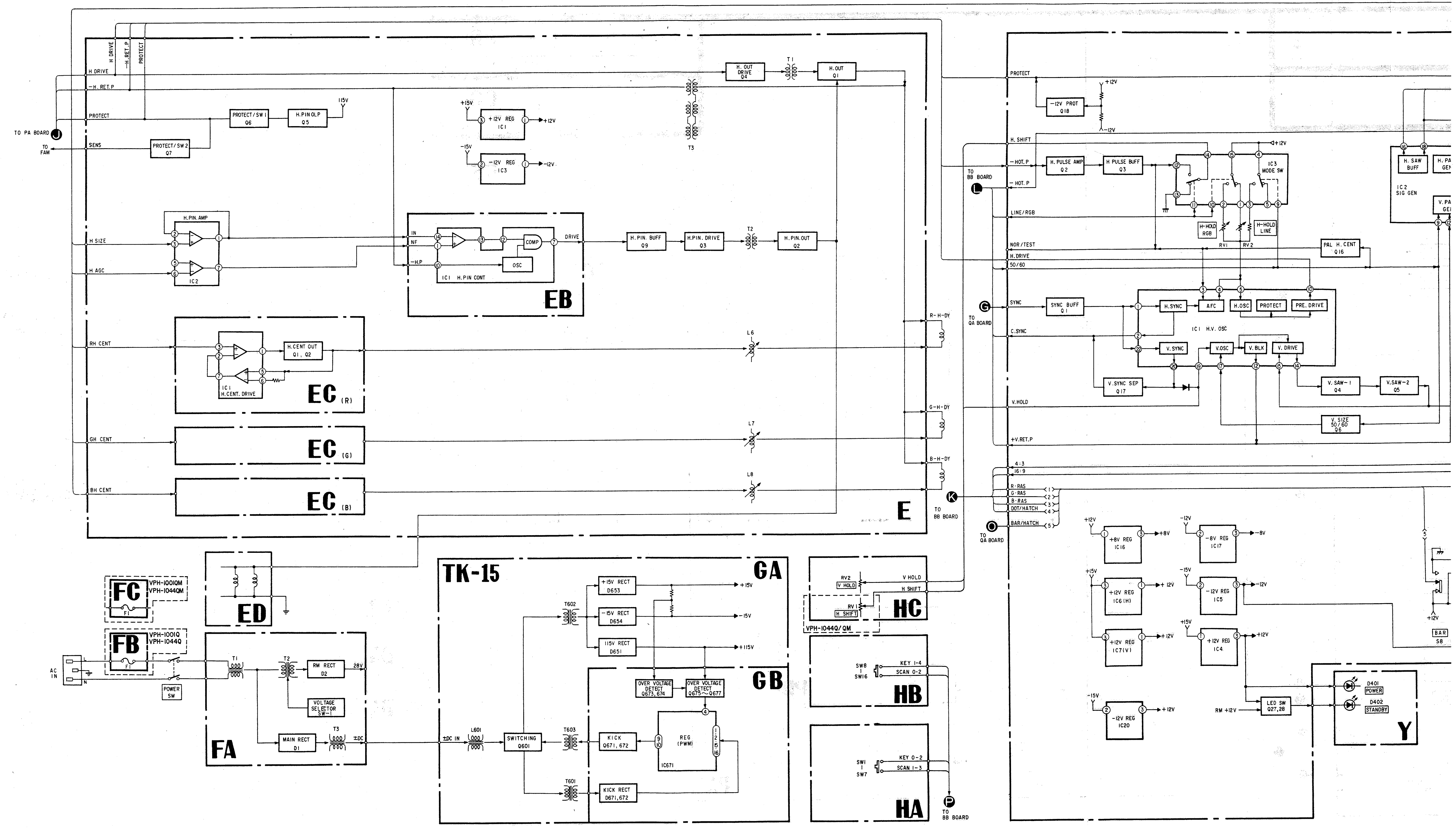
7-2. BLOCK DIAGRAMS

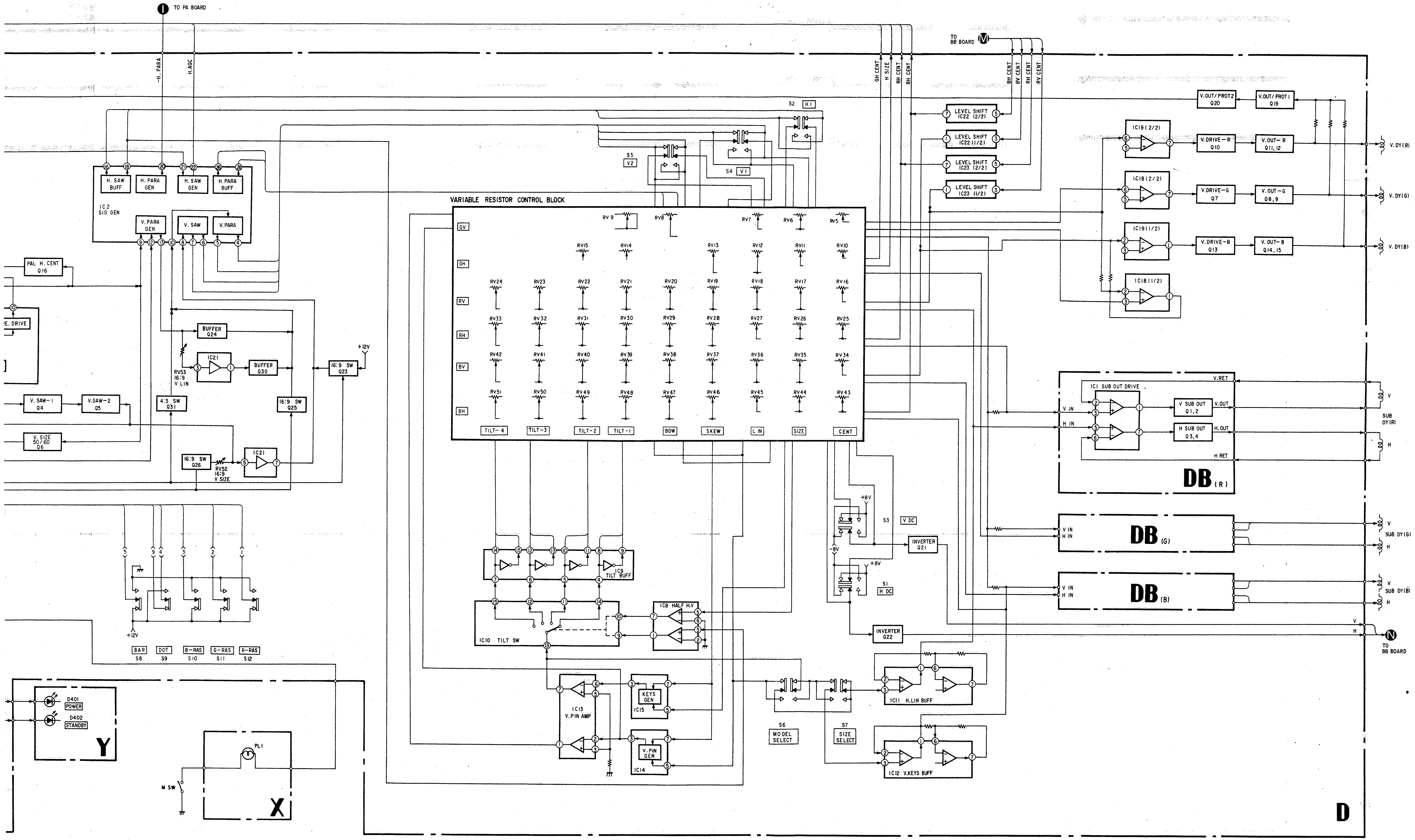
PROTECTOR BLOCK DIAGRAM

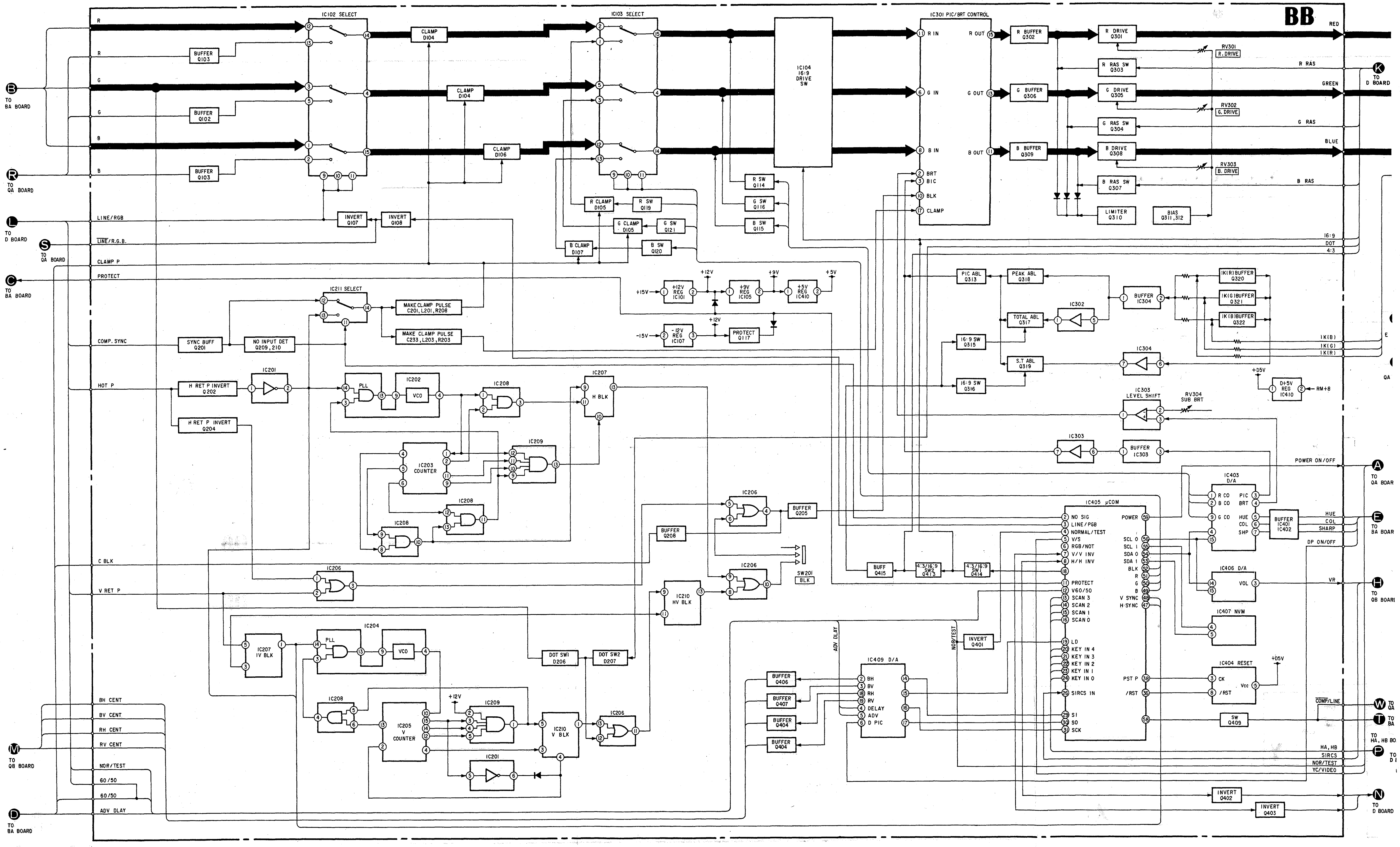

QB BOARD
FAN 1
FAN 2
FAN PROT
±12V PROT
E BOARD
FAN PROT
FAN
±12V PROT
115V OCP
H.PIN PROT
BA BOARD
5V PROT
±12V PROT
BB BOARD
±12V PROT
μCOM
QA BOARD
SW REG ON/OFF
+12V PROT
D BOARD
V DEF PROT
±12V PROT
GA BOARD
GB BOARD
±15V PROT
115V OVP
SW PULSE GEN
115V OCP
PA BOARD
115V OCP
±3V PROT
CONV P GEN
HV PROT
HV BLOCK
HV REG
IK PROT
HV REG PROT
115V OVP
PC BOARD

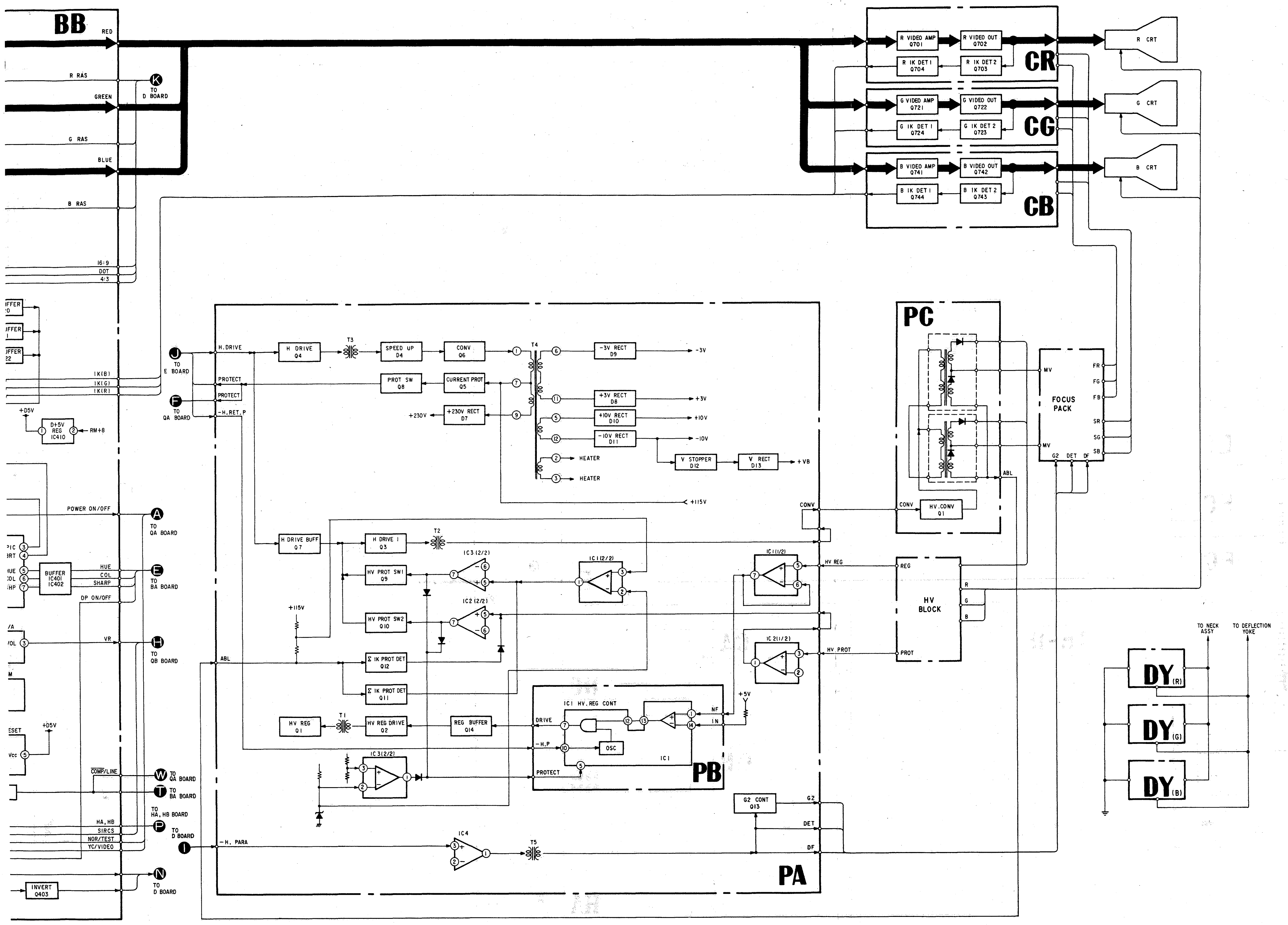

BA
QA
QB
R
G
B
H/D SYNC
VD
R BUFFER Q1
G BUFFER Q3
B BUFFER Q5
R OUT Q2
G OUT Q4
B OUT Q6
CLAMP BUFFER Q9
LIMIT BUFFER Q7
IC1 SYNC MIX
SW Q20
RGB BLK Q8
RGB SW Q40
LINE/RGB
TO BB BOARD
IC2 MODE CONT
SW Q19
VPH-1044 Q/QM
Y/VIDEO
SYNC
SYNC AMP Q12,13
BUFFER Q14
TO DB BOARD
IC4 COMP SW
B-Y BUFF Q45,46
R-Y BUFF Q42,43
B-Y
C(R-Y)
COMP SW Q47
COMP LINE
MONITOR OUT
C IN
V IN
Y IN
X2 Q17,18
MIX Q11,16
IC3(1/2)
IC3(2/2)
Q28
Q29
Q30
Q10
Q15
YC/V
NOR/TEST
TO BB BOARD
IC6. TEST SIG GEN
BAR/HATCH
TO D BOARD
YC/VIDEO
PROTECT
TO PA BOARD
Q21,22
RM+12V
Q23,24
+12V
J102
J101
Q211
Q212
VIDEO IN
AUDIO IN
MONITOR OUT
SIRCS IN
SIRCS OUT
Q213
TO FAN
FAN PROT Q202,203
IC301
ATT
IC302
SP
VR
Q304,305
SHAPER Q208,209
Q210
Q214
AMPERE LIMITER Q204-Q207
+6V
TO BB BOARD
IC1 SYSTEM SW
Q3 BUFF
Q2 INV
Q35 INV
LPF FL3
COLOR SYSTEM ENCODER Q1,2,Q8
Q7 BUFF
DAT L105
DAR RV101
COMP/LINE
-15V
-12V
+15V
+12V
+15V
+5V
-12V REG IC14
12V REG IC16
5V REG IC17
PROTECTOR Q1,4,24,25
C
B-Y
C(R-Y)


IC1
SYSTEM SW
Q3
BUFF
Q9,10,11
AMP
4.43TRAP
4.25TRAP
BPF1,2
DL
DL102
50/60 SW
Q325
IC6
SW
LPF
FL4
Q30,26,27
AMP
CLAMP
LIMITTER
Q18,19,39,D10
PAL/NTSC
V IN
C OUT
Y OUT
IC10
COM FILTER
CLOCK
LPF
FL3
LPF
FL3
SHAPER
Q205,206,207
COLOR SYSTEM
ENCODER
D5,6,14,Q21,22,43
COLOR SYSTEM
ENCODER
D1,2,Q8
Q7
BUFF
BELL FILTER
L120
4.43 BPF
C35,36,L101
Q14,17
BUFF, SW
Q45
SW
IC3
TRANSIENT
IMPROVE
Y IN
R-Y IN
B-Y IN
Y OUT
R-Y OUT
B-Y OUT
Q118,119,120
AMP
W/B DET
D3,4,101,Q23
C IN
R-Y
OUT
B-Y
OUT
DAT
L105
DL
DL101
DAR
RV101
L106
L107
SECAM
R-Y
SECAM
B-Y
IC2
DECODER
SCP IN
NTSC 3.58
NTSC 4.43
SECAM
PAL
SECAM
ID
RAMP
OSC
Q37
L108
RV105
SUB HUE
Q38
SW
CT101
X101
X102
CT102
Q41
SW
Q40
BUFF
Q39
BUFF
2XOSC
IC5
Q201,202
203,204
SW
+12V
+15V
+5V
V REG
IC16
5V REG
IC17
OR
,25
DL
DL103
20nS
60nS
100nS
Q342
BUFF
Q341
BUFF
Q340
BUFF
IC11
50Hz/60Hz DET
IC11
50
60
SCP OUT
V SYNC OUT
H PULSE
IC15
SCP GEN
SYNC SEP
IC15
Y IN
50/60 SW
Q321
Q336,337,338
AMP
CLAMP BUFFER
Q327,314,D303,304
BUFF
Q305
SYNC
50/60
ADV DELAY
D
TO
BB BOARD
Q313,317,318
AMP
CONTROL
Y IN
IC12
SHARPNESS
Y OUT
Q33
BUFF
LEVEL SHIFT
RV108,Q332,333
SHARP
E
TO
BB BOARD
LEVEL SIFT
RV106,Q328,329
COL
LEVEL SIFT
RV107,Q330,331
HUE
DP SW
Q301
DP ON/OFF
Q304
BUFF
Q303
BUFF
IC4
R-Y/B-Y SW
B-Y
C
COMP/LINE
INV.
Q315
C(R-Y)
Y IN
R-Y IN
B-Y IN
IC8
MATRIX
COL
HUE
AUTO
PED
R
G
B
BLK
CLAMP
CLAMP P
BLK BUFFER
Q302
C BLK
Q308
BUFF
R OUT
Q307
BUFF
G OUT
Q306
BUFF
B OUT
B
TO
BB BOARD

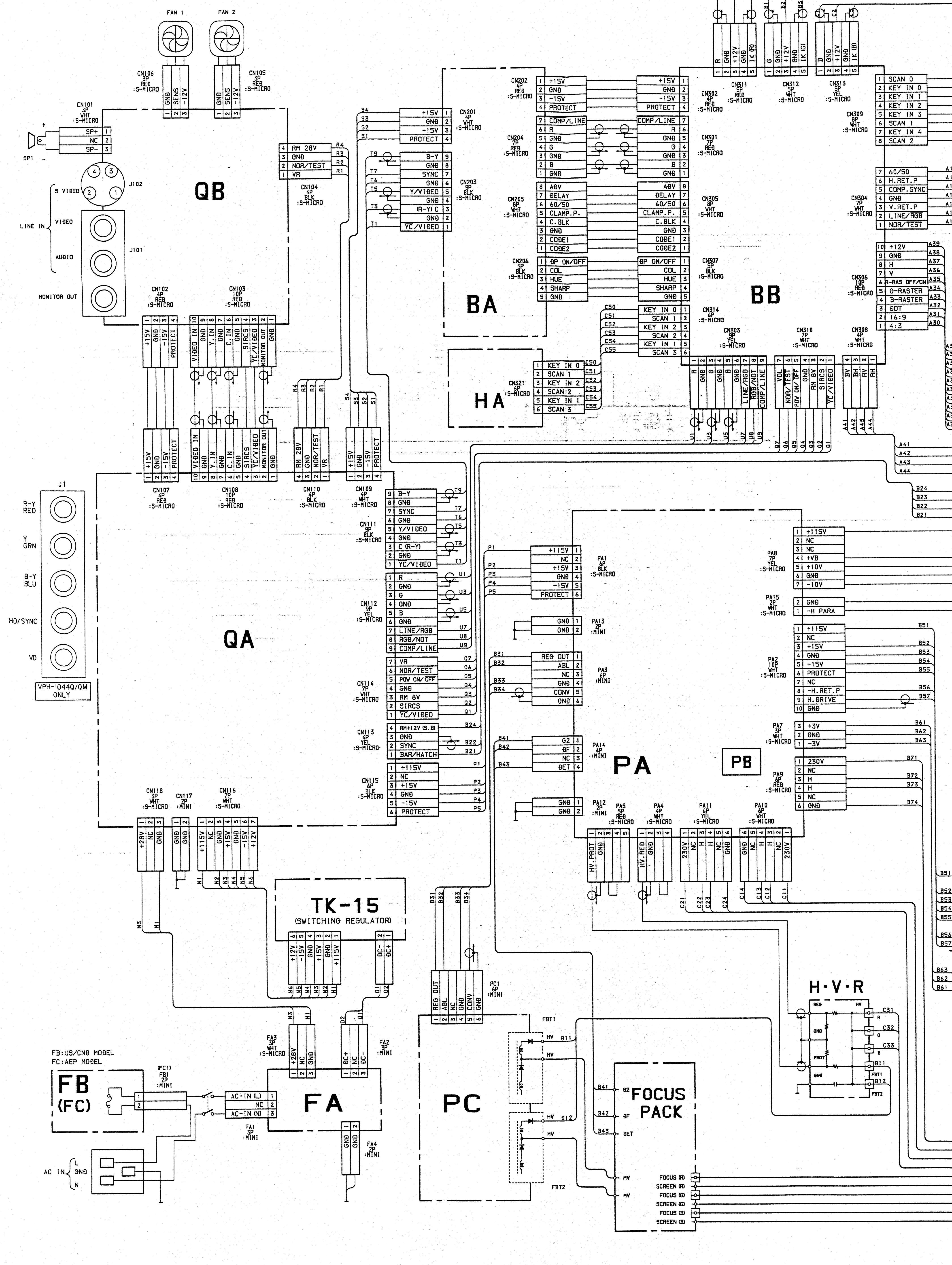

E
EB
EC (R)
EC (G)
EC (B)
ED
FA
FB
FC
TK-15
GA
GB
HA
HB
HC
Y
TO PA BOARD J
TO FAM
H DRIVE
-H. RET. P
PROTECT
SENS
PROTECT/SW 1 Q6
H.PIN OLP Q5
PROTECT/SW 2 Q7
115V
+15V
+12V REG IC1
+12V
-15V
-12V REG IC3
-12V
H. OUT DRIVE Q4
T1
H. OUT Q1
T3
H.PIN. AMP
IC2
H SIZE
H AGC
IN
NF
-H.P
COMP
OSC
IC1 H.PIN CONT
DRIVE
H.PIN. BUFF Q9
H.PIN. DRIVE Q3
T2
H.PIN. OUT Q2
RH CENT
H.CENT OUT Q1, Q2
IC1 H.CENT. DRIVE
GH CENT
BH CENT
L6
L7
L8
R-H-DY
G-H-DY
B-H-DY
TO BB BOARD
VPH-1001QM
VPH-1044QM
VPH-1001Q
VPH-1044Q
F1
AC IN
POWER SW
RM RECT D2
28V
VOLTAGE SELECTOR SW-1
MAIN RECT D1
±DC
±DC IN
L601
SWITCHING Q601
T602
T603
T601
+15V RECT D653
-15V RECT D654
115V RECT D651
+15V
-15V
+115V
OVER VOLTAGE DETECT Q673, 674
OVER VOLTAGE DETECT Q675～Q677
KICK Q671, 672
REG (PWM) IC671
KICK RECT D671, 672
RV2 V HOLD
RV1 H SHIFT
V HOLD
H SHIFT
VPH-1044Q/QM
SW8 - SW16
KEY 1-4
SCAN 0-2
SW1 - SW7
KEY 0-2
SCAN 1-3
TO BB BOARD P
PROTECT
-12V PROT Q18
+12V
-12V
H. SHIFT
-HOT. P
TO BB BOARD L
H. PULSE AMP Q2
H PULSE BUFF Q3
IC3 MODE SW
H-HOLD RGB
H-HOLD LINE
RV1
RV2
LINE/RGB
NOR/TEST
H.DRIVE
50/60
PAL H. CENT Q16
SYNC
TO QA BOARD G
SYNC BUFF Q1
C.SYNC
H.SYNC
AFC
H.OSC
PROTECT
PRE. DRIVE
IC1 H.V. OSC
V. SYNC
V.OSC
V. BLK
V. DRIVE
V.SYNC SEP Q17
V. SAW-1 Q4
V.SAW-2 Q5
V.HOLD
V. SIZE 50/60 Q6
+V.RET.P
4:3
16:9
R-RAS
G-RAS
B-RAS
DOT/HATCH
BAR/HATCH
TO QA BOARD O
IC2 SIG GEN
H. SAW BUFF
H. PA GEN
V. PA GE
+8V REG IC16
+8V
-8V REG IC17
-8V
+12V REG IC6(H)
-12V REG IC5
+12V REG IC7(V)
+12V REG IC4
-12V REG IC20
RM +12V
LED SW Q27, 28
D401 POWER
D402 STANDBY
BAR S8


TO PA BOARD
-H. PARA
H.AGC
GH CENT
H SIZE
RH CENT
BH CENT
TO BB BOARD
BH CENT
BV CENT
RH CENT
RV CENT
S2
H1
LEVEL SHIFT IC22 (2/2)
LEVEL SHIFT IC22 (1/2)
LEVEL SHIFT IC23 (2/2)
LEVEL SHIFT IC23 (1/2)
V.OUT/PROT2 Q20
V.OUT/PROT1 Q19
IC19 (2/2)
V.DRIVE-R Q10
V.OUT-R Q11,12
V.DY(R)
IC18 (2/2)
V.DRIVE-G Q7
V.OUT-G Q8,9
V.DY(G)
IC19 (1/2)
V.DRIVE-B Q13
V.OUT-B Q14,15
V.DY(B)
IC18 (1/2)
S5
V2
S4
V1
H. SAW BUFF
H. PARA GEN
H. SAW GEN
H. PARA BUFF
IC2 SIG GEN
V. PARA GEN
V. SAW
V. PARA
VARIABLE RESISTOR CONTROL BLOCK
GV
GH
RV
RH
BV
BH
RV9
RV8
RV7
RV6
RV5
RV15
RV14
RV13
RV12
RV11
RV10
RV24
RV23
RV22
RV21
RV20
RV19
RV18
RV17
RV16
RV33
RV32
RV31
RV30
RV29
RV28
RV27
RV26
RV25
RV42
RV41
RV40
RV39
RV38
RV37
RV36
RV35
RV34
RV51
RV50
RV49
RV48
RV47
RV46
RV45
RV44
RV43
TILT-4
TILT-3
TILT-2
TILT-1
BOW
SKEW
L IN
SIZE
CENT
PAL H. CENT Q16
PE. DRIVE
BUFFER Q24
IC21
BUFFER Q30
RV53 16:9 V LIN
16:9 SW Q23
+12V
V. SAW-1 Q4
V.SAW-2 Q5
4:3 SW Q31
16:9 SW Q25
V. SIZE 50/60 Q6
16:9 SW Q26
RV52 16:9 V SIZE
IC21
V.RET
IC1 SUB OUT DRIVE
V IN
H IN
V SUB OUT Q1,2
V.OUT
H SUB OUT Q3,4
H.OUT
H RET
V
SUB DY(R)
H
DB (R)
+8V
S3
V DC
INVERTER Q21
-8V
+8V
S1
H DC
V IN
H IN
DB (G)
V
SUB DY(G)
H
V IN
H IN
DB (B)
V
SUB DY(B)
H
V
H
TO BB BOARD
INVERTER Q22
IC9 TILT BUFF
IC8 HALF H.V
IC10 TILT SW
+12V
BAR S8
DOT S9
B-RAS S10
G-RAS S11
R-RAS S12
IC13 V.PIN AMP
KEYS GEN
IC15
V.PIN GEN
IC14
IC11 H.LIN BUFF
S6 MODEL SELECT
S7 SIZE SELECT
IC12 V.KEYS BUFF
D401 POWER
D402 STANDBY
Y
PL1
M SW
X
D

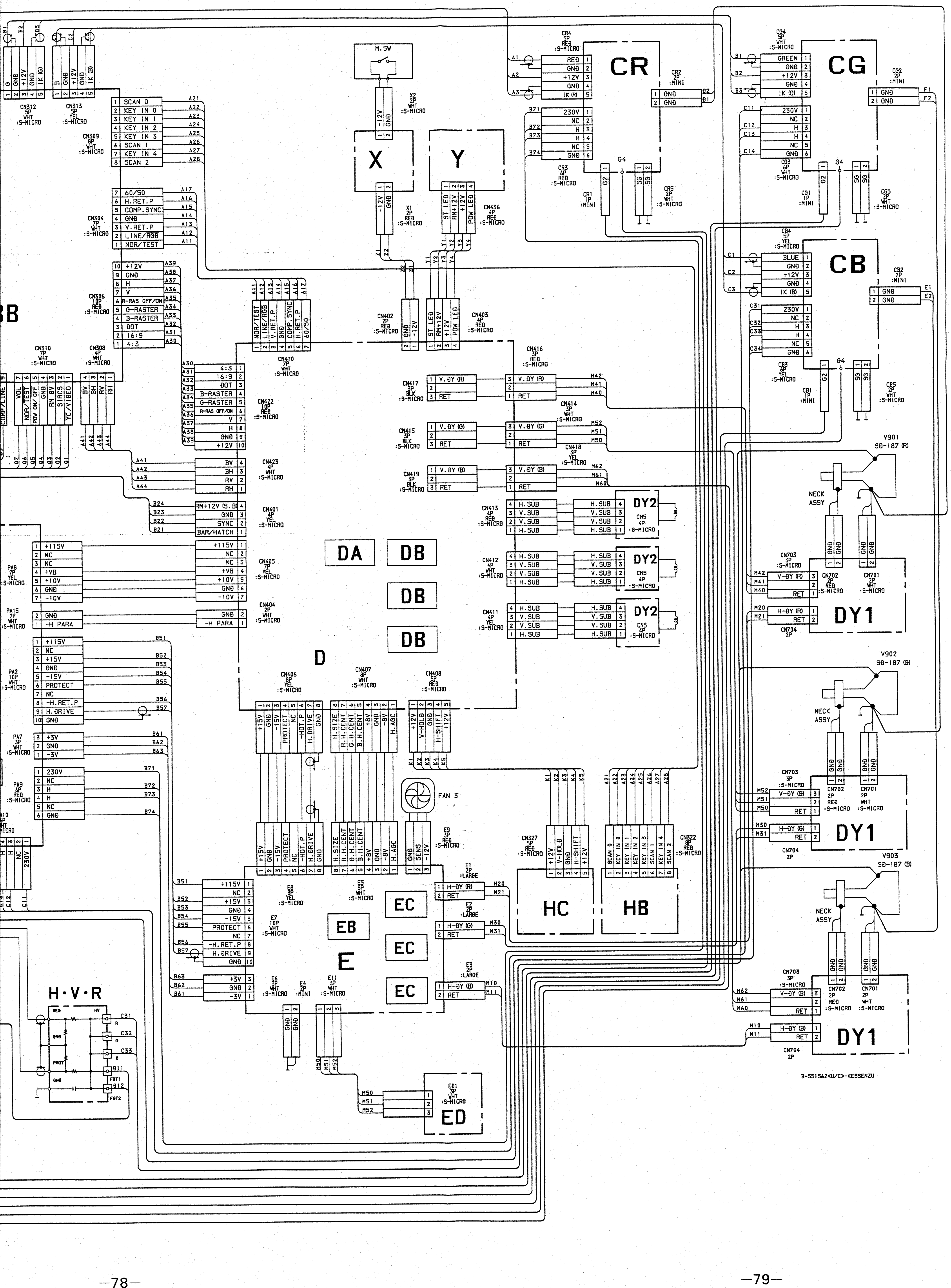

BB
TO BA BOARD
TO QA BOARD
TO D BOARD
TO QA BOARD
TO BA BOARD
TO QB BOARD
TO BA BOARD
R
G
B
LINE/RGB
LINE/R.G.B.
CLAMP P
PROTECT
COMP. SYNC
HOT P
C BLK
V RET P
BH CENT
BV CENT
RH CENT
RV CENT
NOR/TEST
60/50
60/50
ADV DLAY
BUFFER Q103
BUFFER Q102
BUFFER Q103
IC102 SELECT
CLAMP D104
CLAMP D104
CLAMP D106
IC103 SELECT
IC104 16:9 DRIVE SW
R SW Q114
G SW Q116
B SW Q115
R CLAMP D105
R SW Q119
G CLAMP D105
G SW Q121
B CLAMP D107
B SW Q120
INVERT Q107
INVERT Q108
IC301 PIC/BRT CONTROL
R IN
G IN
B IN
BRT
BIC
BLK
CLAMP
R OUT
G OUT
B OUT
R BUFFER Q302
G BUFFER Q306
B BUFFER Q309
R DRIVE Q301
G DRIVE Q305
B DRIVE Q308
R RAS SW Q303
G RAS SW Q304
B RAS SW Q307
RV301 R.DRIVE
RV302 G.DRIVE
RV303 B.DRIVE
LIMITER Q310
BIAS Q311,312
RED
R RAS
GREEN
G RAS
BLUE
B RAS
16:9
DOT
4:3
+12V
+9V
+5V
+15V
+12V REG IC101
+9V REG IC105
+5V REG IC410
-15V
-12V REG IC107
+12V
PROTECT Q117
IC211 SELECT
MAKE CLAMP PULSE C201,L201,R208
MAKE CLAMP PULSE C233,L203,R203
SYNC BUFF Q201
NO INPUT DET Q209,210
H RET P INVERT Q202
H RET P INVERT Q204
IC201
PLL
IC202
VCO
IC208
IC207
H BLK
IC203 COUNTER
IC209
IC208
IC208
IC206
BUFFER Q205
BUFFER Q208
IC206
SW201 BLK
IC206
IC210 HV BLK
IC207 IV BLK
IC204
PLL
VCO
DOT SW1 D206
DOT SW2 D207
IC208
IC205 V COUNTER
+12V
IC209
IC210 V BLK
IC206
IC201
PIC ABL Q313
PEAK ABL Q318
TOTAL ABL Q317
IC302
BUFFER IC304
IK(R)BUFFER Q320
IK(G)BUFFER Q321
IK(B)BUFFER Q322
16:9 SW Q315
S.T ABL Q319
16:9 SW Q316
IC304
IK(B)
IK(G)
IK(R)
+D5V
D+5V REG IC410
RM+8
IC303 LEVEL SHIFT
RV304 SUB BRT
IC303
BUFFER IC303
POWER ON/OFF
IC403 D/A
R CO
B CO
G CO
PIC
BRT
HUE
COL
SHP
BUFFER IC401 IC402
HUE
COL
SHARP
DP ON/OFF
IC405 μCOM
NO SIG
LINE/PGB
NORMAL/TEST
V/S
RGB/NOT
V/V INV
H/H INV
PROTECT
V60/50
SCAN 3
SCAN 2
SCAN 1
SCAN 0
LD
KEY IN 4
KEY IN 3
KEY IN 2
KEY IN 1
KEY IN 0
SIRCS IN
SI
SO
SCK
POWER
SCL 0
SCL 1
SDA 0
SDA 1
BLK
R
G
B
V SYNC
H SYNC
PST P
/RST
IC406 D/A
VOL
VR
IC407 NVM
IC404 RESET
CK
Vcc
/RST
+D5V
SW Q409
BUFF Q415
4:3/16:9 SW2 Q413
4:3/16:9 SW1 Q414
INVERT Q401
ADV DLAY
NOR/TEST
IC409 D/A
BH
BV
RH
RV
DELAY
ADV
D PIC
BUFFER Q406
BUFFER Q407
BUFFER Q404
BUFFER Q404
INVERT Q402
INVERT Q403
COMP/LINE
HA, HB
SIRCS
NOR/TEST
YC/VIDEO
TO QA BOARD
TO BA BOARD
TO QB BOARD
TO D BOARD
TO HA, HB BO

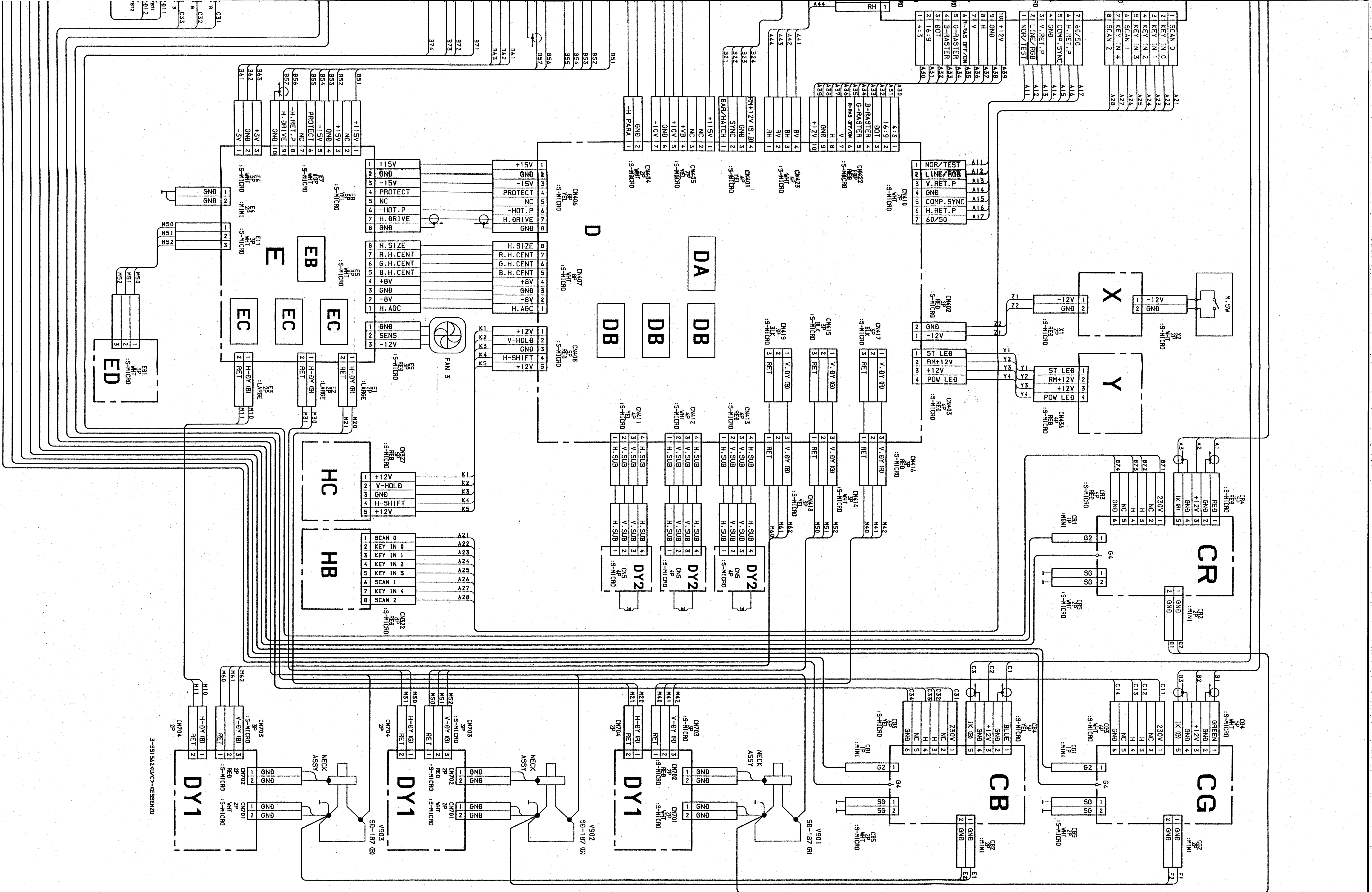

BB
RED
R RAS
K TO D BOARD
GREEN
G RAS
BLUE
B RAS
16:9
DOT
4:3
IK(B)
IK(G)
IK(R)
+D5V
D+5V REG IC410
RM+8
POWER ON/OFF
A TO QA BOARD
BUFFER IC401 IC402
HUE
COL
SHARP
E TO BA BOARD
DP ON/OFF
VR
H TO QB BOARD
+D5V
COMP/LINE
W TO QA BOARD
T TO BA BOARD
TO HA, HB BOARD
HA, HB
SIRCS
NOR/TEST
YC/VIDEO
P TO D BOARD
N TO D BOARD
INVERT Q403
J TO E BOARD
F TO QA BOARD
I
H.DRIVE
PROTECT
PROTECT
-H.RET.P
ABL
-H. PARA
H DRIVE Q4
T3
SPEED UP D4
CONV Q6
T4
-3V RECT D9
-3V
PROT SW Q8
CURRENT PROT Q5
+230V
+230V RECT D7
+3V RECT D8
+3V
+10V RECT D10
+10V
-10V RECT D11
-10V
V STOPPER D12
V RECT D13
+VB
HEATER
HEATER
+115V
H DRIVE BUFF Q7
H DRIVE 1 Q3
T2
IC3 (2/2)
IC1 (2/2)
HV PROT SW1 Q9
IC2 (2/2)
HV PROT SW2 Q10
+115V
Σ IK PROT DET Q12
Σ IK PROT DET Q11
HV REG Q1
T1
HV REG DRIVE Q2
REG BUFFER Q14
IC1 HV. REG CONT
DRIVE
-H.P
PROTECT
OSC
IC1
NF
IN
+5V
PB
IC 3(2/2)
IC4
T5
IC1(1/2)
IC 2(1/2)
HV REG
HV PROT
CONV
G2 CONT Q13
G2
DET
DF
PA
R VIDEO AMP Q701
R VIDEO OUT Q702
R IK DET1 Q704
R IK DET2 Q703
CR
G VIDEO AMP Q721
G VIDEO OUT Q722
G IK DET1 Q724
G IK DET2 Q723
CG
B VIDEO AMP Q741
B VIDEO OUT Q742
B IK DET1 Q744
B IK DET2 Q743
CB
R CRT
G CRT
B CRT
PC
CONV
HV.CONV Q1
ABL
FOCUS PACK
MV
MV
FR
FG
FB
SR
SG
SB
G2
DET
DF
REG
HV BLOCK
R
G
B
PROT
TO NECK ASSY
TO DEFLECTION YOKE
DY(R)
DY(G)
DY(B)

7-3. FRAME SCHEMATIC DIAGRAMS



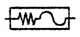
QB
QA
BA
BB
HA
PA
PB
PC
FA
FB (FC)
TK-15
(SWITCHING REGULATOR)
FOCUS PACK
H·V·R
FAN 1
FAN 2
SP1
J1
J101
J102
S VIDEO
LINE IN
VIDEO
AUDIO
MONITOR OUT
R-Y RED
Y GRN
B-Y BLU
HD/SYNC
VD
VPH-1044Q/QM ONLY
FB:US/CND MODEL
FC:AEP MODEL
AC IN
FBT1
FBT2


H·V·R
E
EB
EC
EC
EC
ED
D
DA
DB
DB
DB
HC
HB
X
Y
M.SW
CR
CG
CB
DY1
DY1
DY1
DY2
DY2
DY2
FAN 3
NECK ASSY
V901 SD-187 (R)
V902 SD-187 (G)
V903 SD-187 (B)
B-551562<U/C>-KESSENZU


D
DA
DB
DB
DB
E
EB
EC
EC
EC
ED
HC
HB
X
Y
M.SW
FAN 3
CR
CB
CG
DY1
DY1
DY1
DY2
DY2
DY2
NECK ASSY
V901 SG-187 (R)
V902 SG-187 (G)
V903 SG-187 (B)
CN406 8P YEL :S-MICRO
CN407 8P WHT :S-MICRO
CN408 5P RED :S-MICRO
CN410 7P WHT :S-MICRO
CN402 2P RED :S-MICRO
CN403 4P RED :S-MICRO
CN327 5P RED :S-MICRO
CN322 8P RED :S-MICRO
CN703 3P :S-MICRO
CN704 2P
CN702 2P RED :S-MICRO
CN701 2P WHT :S-MICRO
+15V
GND
-15V
PROTECT
NC
-HOT.P
H.DRIVE
H.SIZE
R.H.CENT
G.H.CENT
B.H.CENT
+8V
-8V
H.AGC
SENS
-12V
+12V
V-HOLD
H-SHIFT
SCAN 0
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
SCAN 1
KEY IN 4
SCAN 2
NOR/TEST
LINE/RGB
V.RET.P
COMP.SYNC
H.RET.P
60/50
ST LED
RM+12V
POW LED
H-DY (R)
H-DY (G)
H-DY (B)
V-DY (R)
V-DY (G)
V-DY (B)
RET
H.SUB
V.SUB
230V
IK (R)
IK (G)
IK (B)
RED
GREEN
BLUE
SG
G2
B-SS1562<U/C>-KESSENZU

7-4. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

Note :

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics.
- All electrolytics are in 50V unless otherwise specified.
- All resistors are in ohms, 1/4W in resistance, 1/10W in chip resistance.
  kΩ=1000Ω, MΩ=1000kΩ
- : nonflammable resistor.
-  : fusible resistor.
- △ : internal component.
- ▭ : panel designation and adjustment for repair.
- All variable and adjustable resistors have charactristic curve B, unless otherwise noted.

- The components identified by ⊠ in this basic schematic diagrams have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required replace only with the value originally used.
- When replacing components identified by ◪, make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ⊠ and repeat the adjustment untill the specified value is achieved. (Refer to R38, 39, 48, 49, 23, 88, 89 adjust on Page 55~56.)

Part replaced (◪)	Adjustment (⊠)
IC2, Q10, D16, D22, C30, R15, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44 (PA BOARD)	HV HOLD DOWN (R38,R39)
IC1, Q14, D17, C3, C39, C56, L2, R31, R32, R33, R34, R46, R47, R48, R49, R82, R83, R84 (PA BOARD) IC11, R3, R4, R7, R14 (PB BOARD)	HV REGULATOR (R48,R49)
IC3, Q9, Q11, Q12, D15, D20, R16, R18, R19. R20, R21, R22, R23, R50, R51, R52, R53, R54, R69 (PA BOARD)	BEAM CURRENT PROTECTOR (R23)
IC1, D18, R18, R85, R86, R87, R88,R89 (PA BOARD) C1, C2, FBT1, FBT2, L1, L2 (PB BOARD) HVR	OVP CIRCUIT CONFIRMATION (R88,R89)

- Voltage value is the reference value between it and the earth, when NTSC 3.58 color bar signal is received from color bar generator (digital multi-meter used : 10M ohms/V DC).
- Unit of voltage values is V (volt)
- NO MARK : PAL MODE
- ( ) : SECAM MODE
- < > : NTSC 3.58 MODE
- ≪ ≫ : NTSC 4.43 MODE
- ✳ : Measurement disabled.
- ▬ : B+ line
- ■■■ : B− line
  (Actual measured value may be different).
- Circled numbers are waveform references.

Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RS	NONFLAMMABLE METAL OXIDE
	: RB	NONFLAMMABLE CEMENT
	: RW	NONFLAMMABLE WIREWOUND
	: ※	ADJUSTMENT RESISTOR
COIL	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

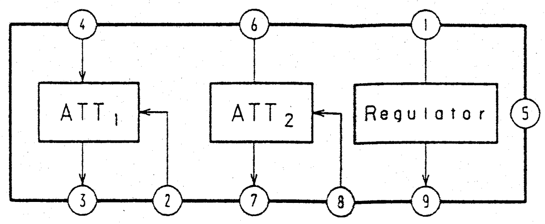
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et par une marque ⚠ sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

QB BOARD

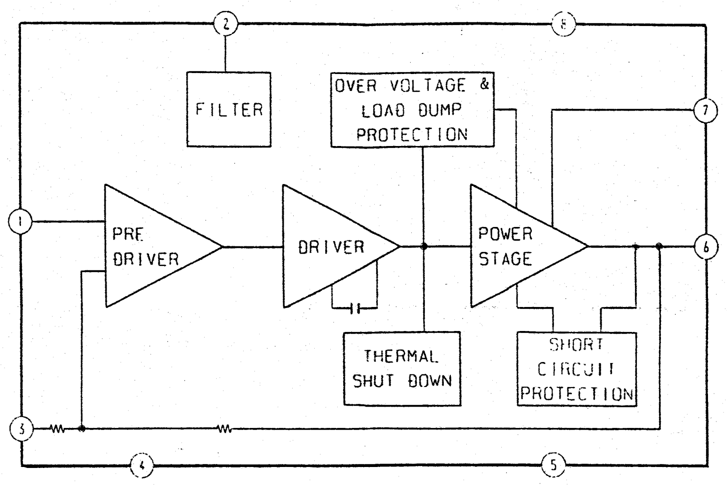
Ref. No.	OPERATION
IC201	−12V REG
IC202	+6V REG
IC301	ATTENUATOR
IC302	VIDEO AMP
IC303	+12V REG
Q201	AUDIO BUFF
Q202	FAN PROT
Q203	FAN PROT
Q204	CURRENT LIMITER
Q205	CURRENT LIMITER
Q206	CURRENT LIMITER
Q207	CURRENT LIMITER
Q208	SIRCS SW
Q209	SIRCS SW
Q210	SIRCS BUFF
Q211	C BUFF
Q212	SW
Q213	NOR/TEST SW
Q214	SIRCS BUFF
Q301	AUDIO BUFF
Q302	VR BUFF
Q303	−15V FILTER
Q304	MUTE -1
Q305	MUTE -2
D201	LIMITER
D202	PROT
D203	OR
D204	CLAMP
D301	PROT
D302	FILTER
D303	−15V FILTER

QB BOARD IC301 μPC1406HA



ATT 1
ATT 2
Regulator
1
2
3
4
5
6
7
8
9

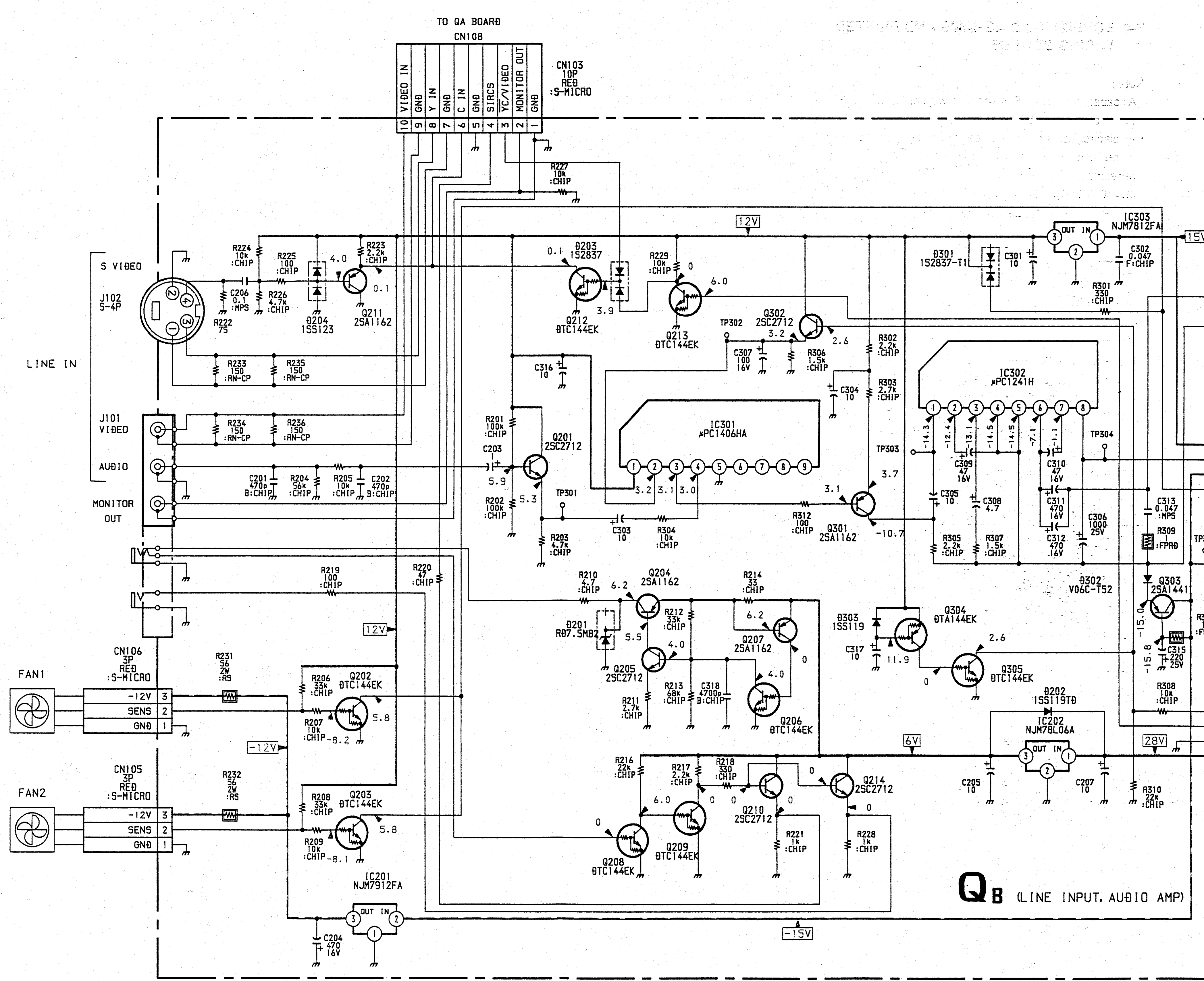
QB BOARD IC302 μPC1241H



FILTER
OVER VOLTAGE & LOAD DUMP PROTECTION
PRE DRIVER
DRIVER
POWER STAGE
THERMAL SHUT DOWN
SHORT CIRCUIT PROTECTION
1
2
3
4
5
6
7

QA BOARD

Ref. No.	OPERATION	Ref. No.	OPERA
IC1	SYNC MIX	Q27	TEST BUFF
IC2	MODE CONT	Q28	Y BUFF
IC3	SW	Q29	YC/VIDEO S
IC4	COMP SW	Q30	YC/VIDEO S
IC6	TEST SIG. GEN	Q40	SW
IC7	+5V REG	Q41	R–Y AMP
IC8	+8V REG	Q42	R–Y BUFF
IC9	+12V REG	Q43	R–Y BUFF
IC10	+12V REG	Q44	B–Y AMP
		Q45	B–Y BUFF
Q1	R BUFF	Q46	B–Y BUFF
Q2	R OUT	Q47	SW
Q3	G BUFF		
Q4	G OUT	D1	LIMIT
Q5	B BUFF	D2	LIMIT
Q6	B OUT	D3	LIMIT
Q7	LIMIT BUFF	D4	LIMIT
Q8	RGB BLK	D5	HD CLAMP
Q9	CLAMP BUFF	D6	VD CLAMP
Q10	YC/VIDEO SW	D7	SYNC DISC
Q11	C BUFF	D8	Y PROT
Q12	SYNC AMP	D9	TEST SW
Q13	SYNC AMP	D10	SW
Q14	SYNC BUFF	D11	PROT.
Q15	NOR/TEST SW	D12	OR
Q16	Y BUFF	D13	PROT
Q17	VIDEO AMP	D14	PROT
Q18	VIDEO BUFF	D15	STARTER
Q19	SW	D16	LEVEL SIHF
Q20	SW	D17	PROT
Q21	POWER SW	D18	POWER
Q22	POWER SW	D19	POWER
Q23	PROTECTOR	D20	VIDEO PRO
Q24	PROTECTOR	D21	R CLAMP
Q25	VIDEO BUFF	D22	G CLAMP
Q26	VIDEO BUFF	D23	B CLAMP



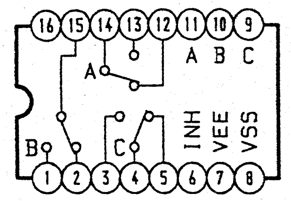
TO QA BOARD CN108
10 VIDEO IN
9 GND
8 Y IN
7 GND
6 C IN
5 GND
4 SIRCS
3 YC/VIDEO
2 MONITOR OUT
1 GND
CN103 10P RED :S-MICRO
LINE IN
S VIDEO
J102 S-4P
J101 VIDEO
AUDIO
MONITOR OUT
FAN1
FAN2
CN106 3P RED :S-MICRO
CN105 3P RED :S-MICRO
-12V
SENS
GND
12V
-12V
6V
28V
-15V
15V
IC301 μPC1406HA
IC302 μPC1241H
IC303 NJM7812FA
IC202 NJM78L06A
IC201 NJM7912FA
Q201 2SC2712
Q202 DTC144EK
Q203 DTC144EK
Q204 2SA1162
Q205 2SC2712
Q206 DTC144EK
Q207 2SA1162
Q208 DTC144EK
Q209 DTC144EK
Q210 2SC2712
Q211 2SA1162
Q212 DTC144EK
Q213 DTC144EK
Q214 2SC2712
Q301 2SA1162
Q302 2SC2712
Q303 2SA1441
Q304 DTA144EK
Q305 DTC144EK
D201 RD7.5MB2
D202 1SS119TD
D203 1S2837
D204 1SS123
D301 1S2837-T1
D302 V06C-T52
D303 1SS119
TP301
TP302
TP303
TP304

QB (LINE INPUT, AUDIO AMP)

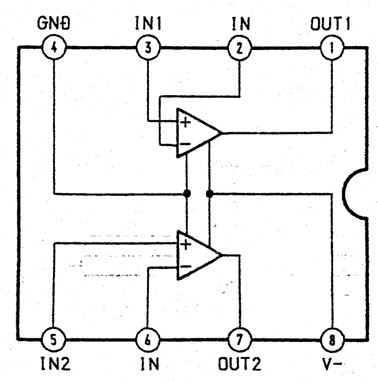
B-SS1562<U/C>-

Ref. No.	OPERATION
Q27	TEST BUFF
Q28	Y BUFF
Q29	YC/VIDEO SW
Q30	YC/VIDEO SW
Q40	SW
Q41	R–Y AMP
Q42	R–Y BUFF
Q43	R–Y BUFF
Q44	B–Y AMP
Q45	B–Y BUFF
Q46	B–Y BUFF
Q47	SW
D1	LIMIT
D2	LIMIT
D3	LIMIT
D4	LIMIT
D5	HD CLAMP
D6	VD CLAMP
D7	SYNC DISCRI
D8	Y PROT
D9	TEST SW
D10	SW
D11	PROT.
D12	OR
D13	PROT
D14	PROT
D15	STARTER
D16	LEVEL SIHFT
D17	PROT
D18	POWER
D19	POWER
D20	VIDEO PROT
D21	R CLAMP
D22	G CLAMP
D23	B CLAMP

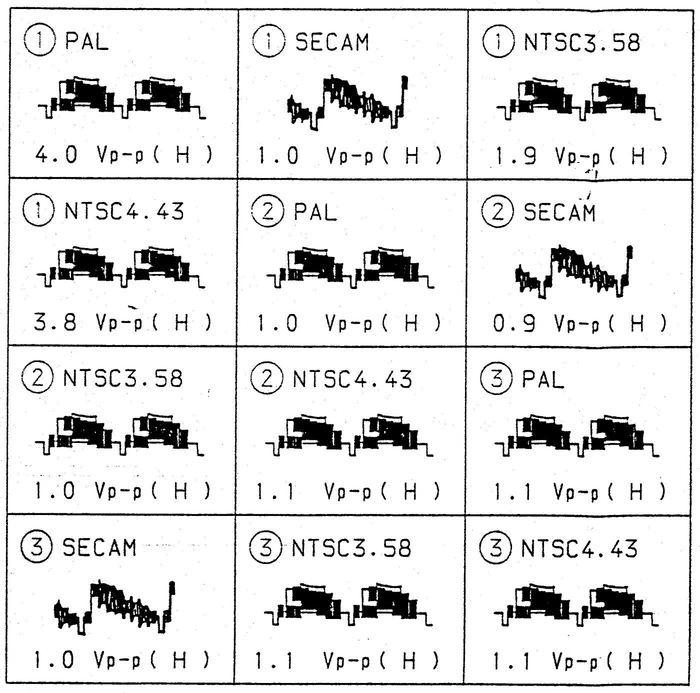
QA BOARD IC2, 4 MC14053BF


16 15 14 13 12 11 10 9
A B C
A
B
C
INH
VEE
VSS
1 2 3 4 5 6 7 8

QA BOARD IC1 µPC393C

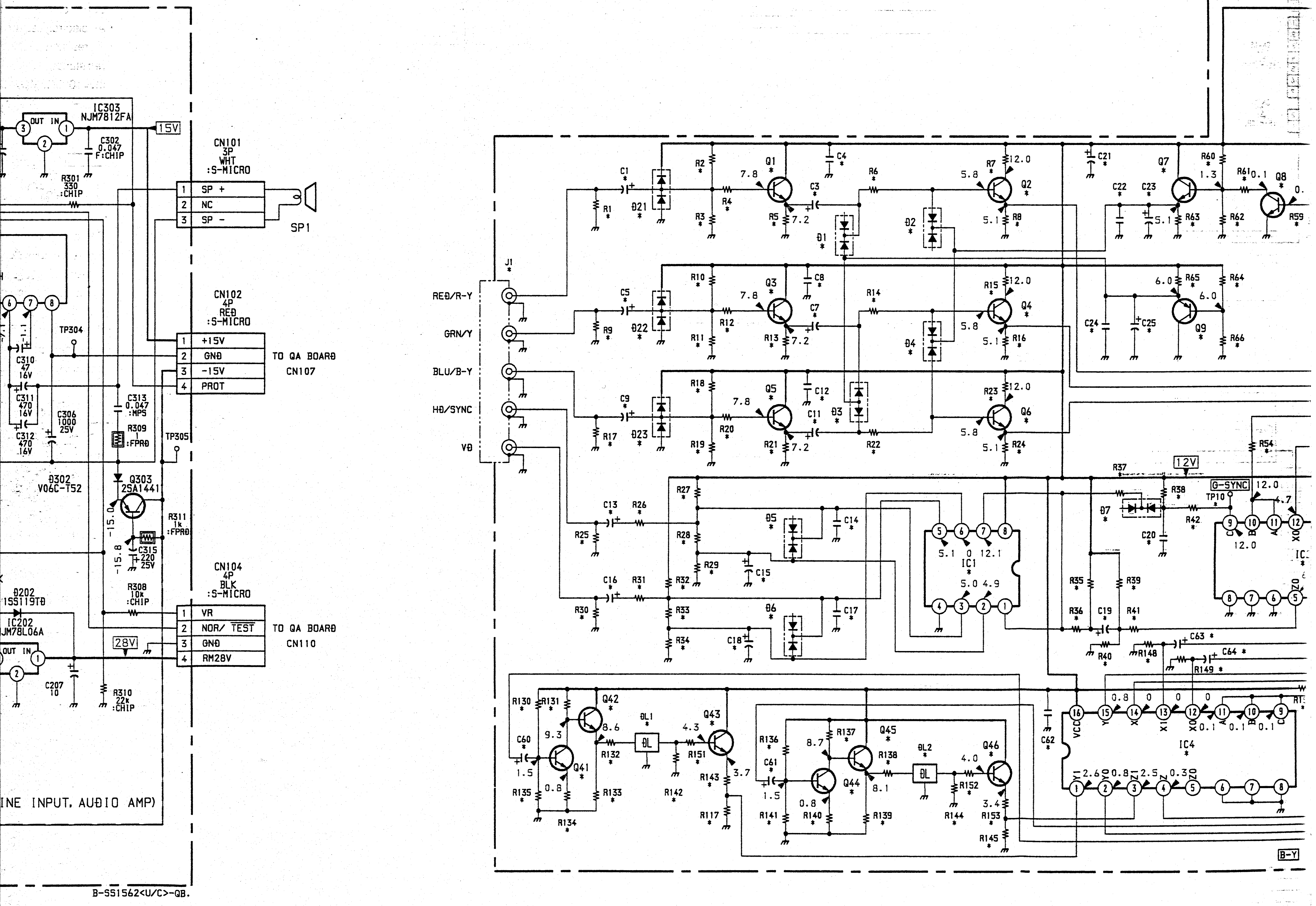

GND
IN1
IN
OUT1
4 3 2 1
5 6 7 8
IN2
IN
OUT2
V-

QA BOARD



QA

(Y/C VID


IC303
NJM7812FA
OUT IN
15V
C302 0.047 :F:CHIP
R301 330 :CHIP
CN101 3P WHT :S-MICRO
SP +
NC
SP -
SP1
TP304
C310 47 16V
C311 470 16V
C312 470 16V
C306 1000 25V
CN102 4P RED :S-MICRO
+15V
GND
-15V
PROT
TO QA BOARD CN107
C313 0.047 :MPS
R309 1 :FPRD
TP305
D302 V06C-T52
Q303 2SA1441
-15.0
-15.8
C315 220 25V
R311 1k :FPRD
R308 10k :CHIP
CN104 4P BLK :S-MICRO
VR
NOR/ TEST
GND
RM28V
TO QA BOARD CN110
D202 1SS119TD
IC202 NJM78L06A
28V
C207 10
R310 22k :CHIP
INE INPUT. AUDIO AMP)
B-SS1562<U/C>-QB.
J1
RED/R-Y
GRN/Y
BLU/B-Y
HD/SYNC
VD
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9
D1 D2 D3 D4 D5 D6 D7 D21 D22 D23
IC1
IC4
Q41 Q42 Q43 Q44 Q45 Q46
DL1 DL2
12V
G-SYNC
TP10
B-Y
VCC

12 13 14 15 16 17 18 19 20 21 22 23

OPERATION
ST BUFF
UFF
VIDEO SW
VIDEO SW

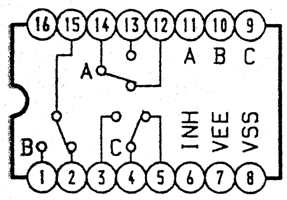
AMP
BUFF
BUFF
AMP
BUFF
BUFF

IT
IT
IT
IT
CLAMP
CLAMP
NC DISCRI
ROT
T SW

DT.

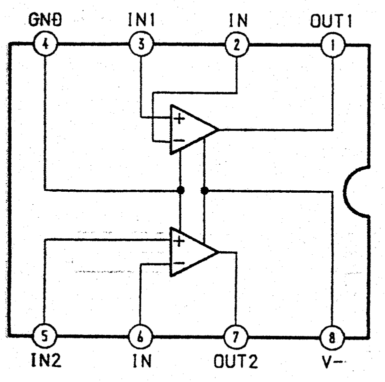
DT
DT
RTER
EL SIHFT
DT
WER
WER
EO PROT
LAMP
LAMP
LAMP

QA BOARD IC2, 4 MC14053BF



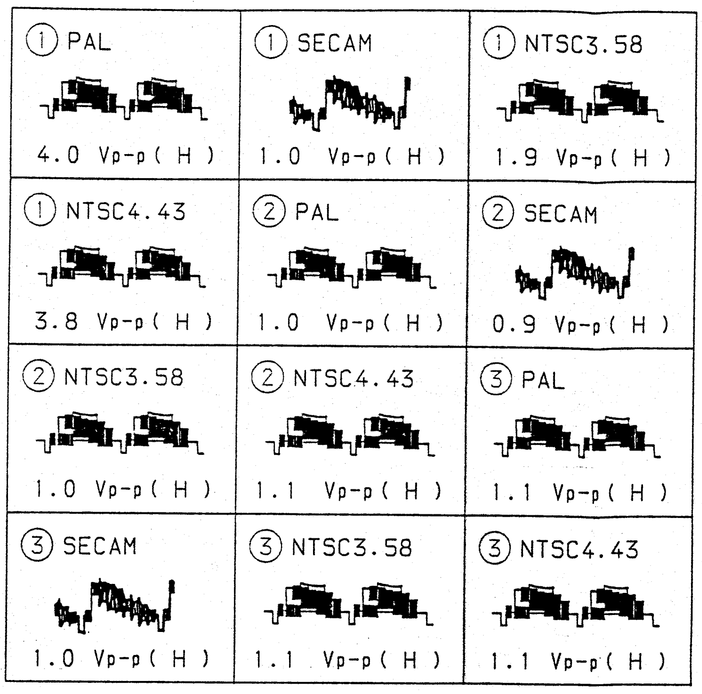
16 15 14 13 12 11 10 9
A B C
A
B
C
INH
VEE
VSS
1 2 3 4 5 6 7 8

QA BOARD IC1 μPC393C



GND
IN1
IN
OUT1
4 3 2 1
5 6 7 8
IN2
IN
OUT2
V-

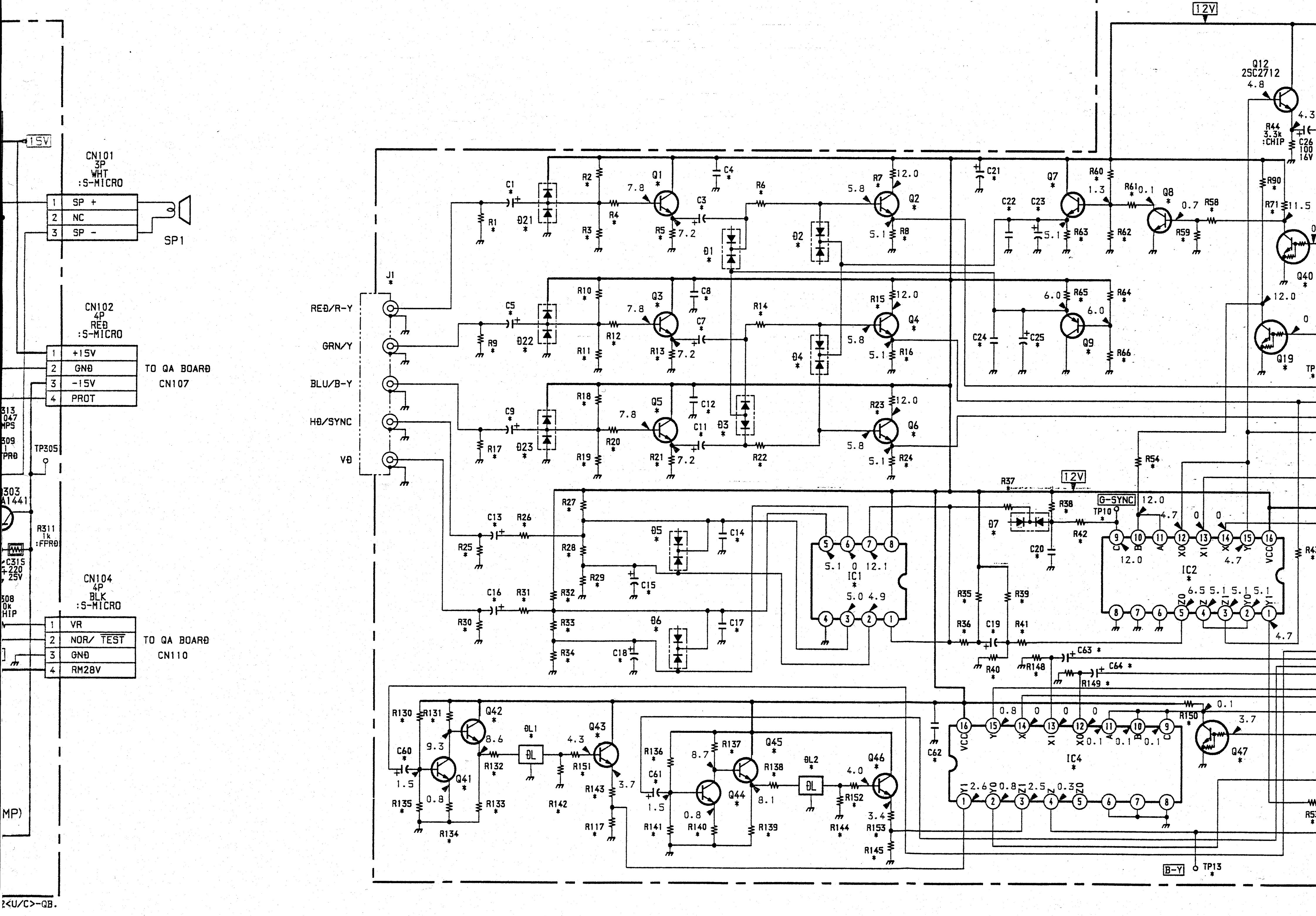
QA BOARD



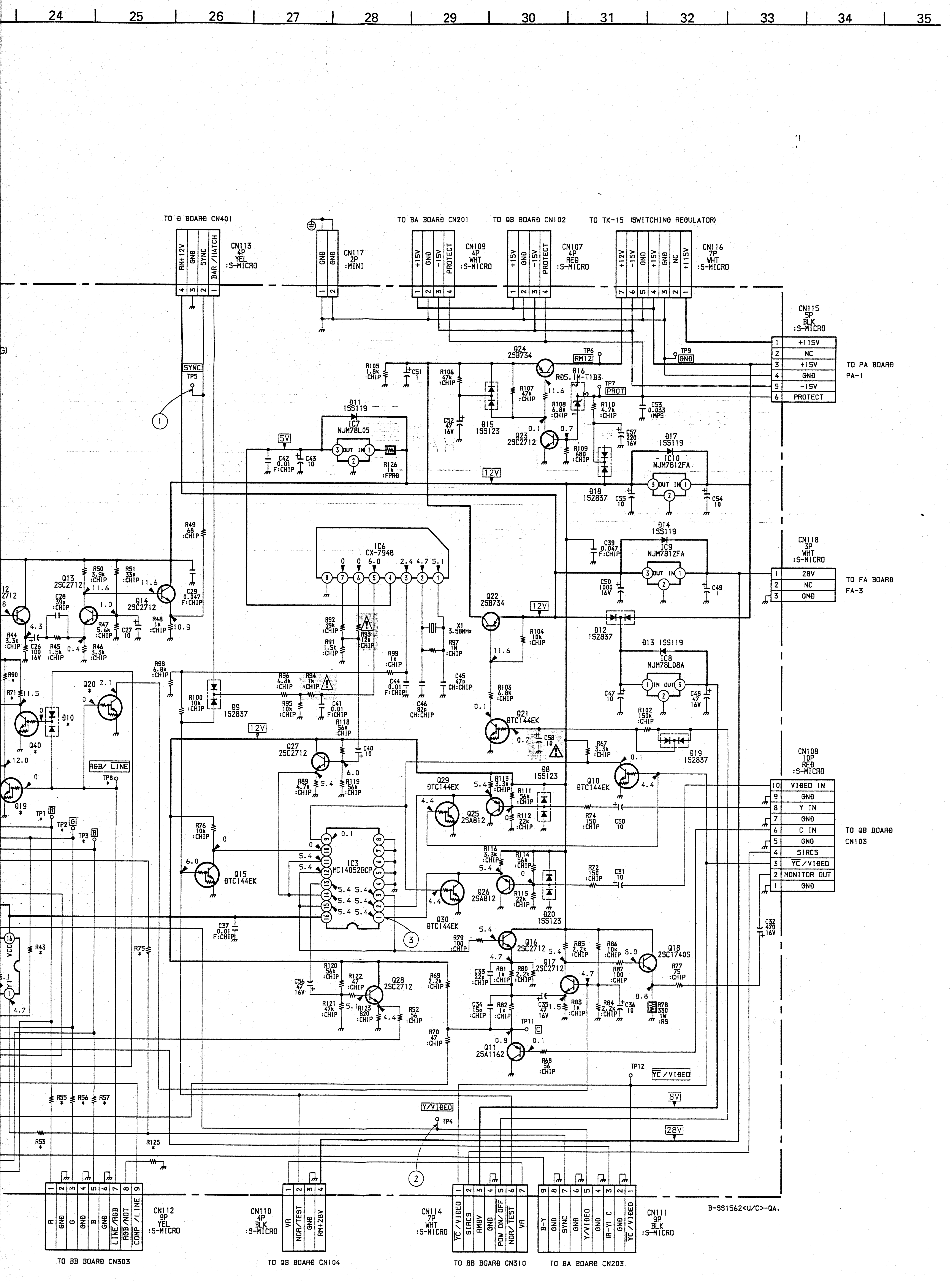
① PAL 4.0 Vp-p (H)	① SECAM 1.0 Vp-p (H)	① NTSC3.58 1.9 Vp-p (H)
① NTSC4.43 3.8 Vp-p (H)	② PAL 1.0 Vp-p (H)	② SECAM 0.9 Vp-p (H)
② NTSC3.58 1.0 Vp-p (H)	② NTSC4.43 1.1 Vp-p (H)	③ PAL 1.1 Vp-p (H)
③ SECAM 1.0 Vp-p (H)	③ NTSC3.58 1.1 Vp-p (H)	③ NTSC4.43 1.1 Vp-p (H)

QA

(Y/C VIDEO SW. REG)



15V
CN101
3P
WHT
:S-MICRO
1 SP +
2 NC
3 SP -
SP1
CN102
4P
RED
:S-MICRO
1 +15V
2 GND
3 -15V
4 PROT
TO QA BOARD
CN107
TP305
R311
1k
:FFR0
CN104
4P
BLK
:S-MICRO
1 VR
2 NOR/ TEST
3 GND
4 RM28V
TO QA BOARD
CN110
MP)
2<U/C>-QB.
J1
RED/R-Y
GRN/Y
BLU/B-Y
HD/SYNC
VD
C1
R1
D21
R2
R3
R4
Q1
7.8
R5
7.2
C3
C4
D1
R6
D2
R7
12.0
5.8
Q2
5.1
R8
C5
R9
D22
R10
R11
R12
Q3
7.8
C8
C7
R13
7.2
R14
D4
R15
12.0
5.8
Q4
5.1
R16
C9
R17
D23
R18
R19
Q5
7.8
R20
R21
7.2
C12
C11
D3
R22
R23
12.0
5.8
Q6
5.1
R24
C21
C22
C23
Q7
5.1
R63
R60
1.3
R61
0.1
Q8
0.7
R58
R62
R59
C24
C25
6.0
R65
6.0
R64
Q9
R66
12V
Q12
2SC2712
4.8
R44
3.3k
:CHIP
C26
100
16V
4.3
R90
R71
11.5
Q40
12.0
Q19
TP
R27
C13
R26
R25
R28
D5
C14
R29
C15
C16
R31
R32
R30
R33
D6
C17
R34
C18
IC1
5.1 0 12.1
5.0 4.9
1 2 3 4 5 6 7 8
R37
12V
R38
G-SYNC
TP10
D7
C20
R42
R54
12.0
4.7
IC2
6.5 5.1 5.1 5.1
4.7
R35
R39
R36
C19
R41
R40
R148
C63
C64
R149
R130
R131
Q42
8.6
C60
9.3
Q41
1.5
R135
0.8
R134
R132
R133
DL1
DL
4.3
Q43
R151
R143
3.7
R142
R117
R136
R137
Q45
8.7
C61
1.5
Q44
R138
8.1
DL2
DL
4.0
Q46
R152
0.8
R140
R141
R139
R144
3.4
R153
R145
C62
VCC
Y
X
X1
X0
C
B
A
Z0
Z
Z1
Y0
Y1
0.8
0
0.1
IC4
2.6
0.8
2.5
0.3
R150
0.1
3.7
Q47
B-Y
TP13



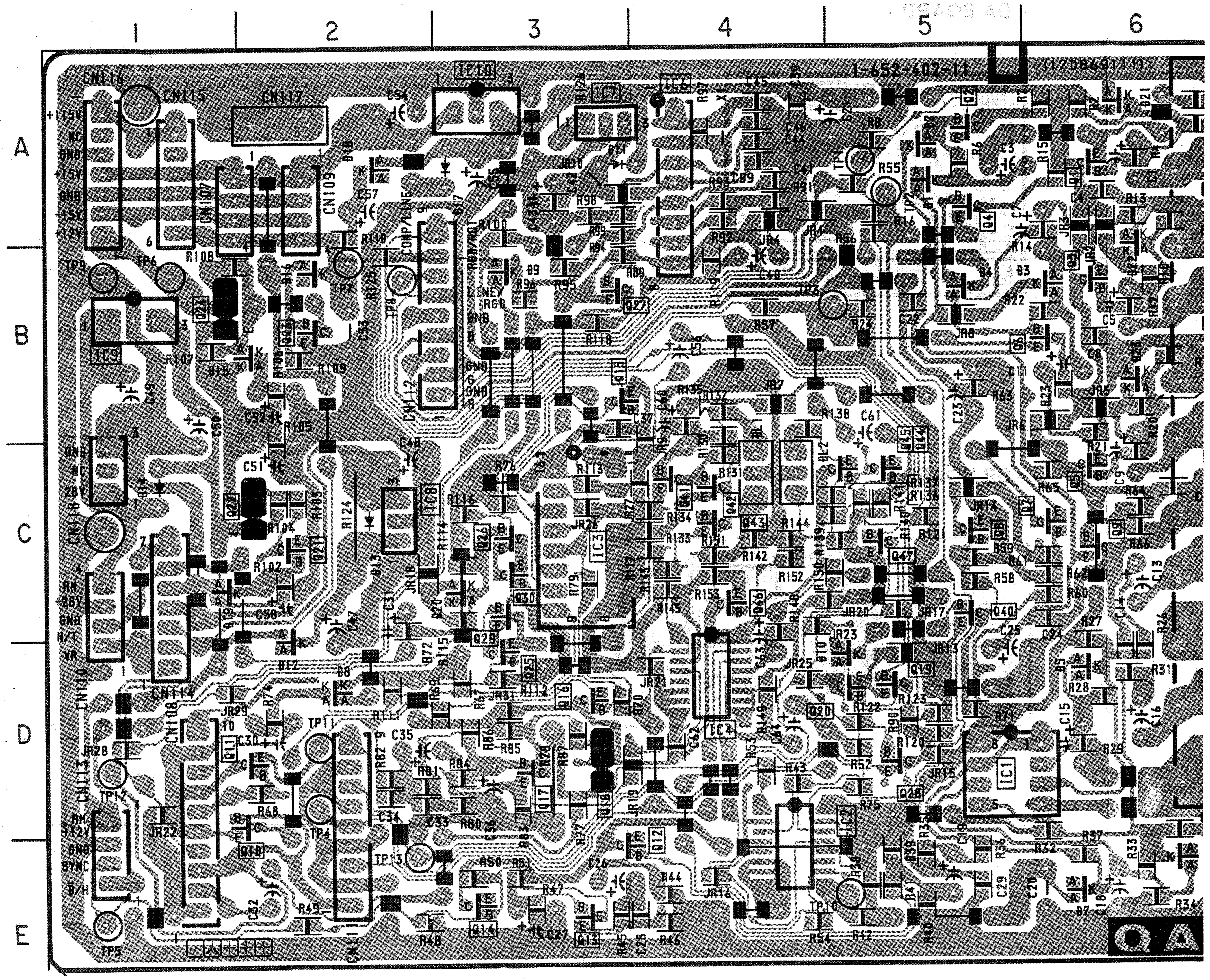
24
25
26
27
28
29
30
31
32
33
34
35
TO Ə BOARD CN401
CN113 4P YEL :S-MICRO
RM+12V
GND
SYNC
BAR /HATCH
CN117 2P :MINI
GND
GND
TO BA BOARD CN201
CN109 4P WHT :S-MICRO
+15V
GND
-15V
PROTECT
TO QB BOARD CN102
CN107 4P RED :S-MICRO
TO TK-15 (SWITCHING REGULATOR)
CN116 7P WHT :S-MICRO
+12V
-15V
GND
+15V
GND
NC
+115V
CN115 5P BLK :S-MICRO
+115V
NC
+15V
GND
-15V
PROTECT
TO PA BOARD PA-1
CN118 3P WHT :S-MICRO
28V
NC
GND
TO FA BOARD FA-3
CN108 10P RED :S-MICRO
VIDEO IN
GND
Y IN
GND
C IN
GNG
SIRCS
YC/VIDEO
MONITOR OUT
GND
TO QB BOARD CN103
SYNC
TP5
TP6 RM12
TP7 PROT
TP9 GND
5V
12V
IC6 CX-7948
IC7 NJM78L05
IC8 NJM78L08A
IC9 NJM7812FA
IC10 NJM7812FA
IC3 MC14052BCP
X1 3.58MHz
Q13 2SC2712
Q14 2SC2712
Q15 DTC144EK
Q16 2SC2712
Q17 2SC2712
Q18 2SC1740S
Q19
Q20
Q21 DTC144EK
Q22 2SB734
Q23 2SC2712
Q24 2SB734
Q25 2SA812
Q26 2SA812
Q27 2SC2712
Q28 2SC2712
Q29 DTC144EK
Q30 DTC144EK
Q10 DTC144EK
Q11 2SA1162
Q40
D8 1SS123
D9 1S2837
D10
D11 1SS119
D12 1S2837
D13 1SS119
D14 1SS119
D15 1SS123
D16 RD5.1M-T1B3
D17 1SS119
D18 1S2837
D19 1S2837
D20 1SS123
RGB/LINE
TP1 R
TP2 G
TP3 B
TP8
TP11 C
TP12 YC/VIDEO
TP4 Y/VIDEO
8V
28V
①
②
③
CN112 9P YEL :S-MICRO
R
GND
G
GND
B
GND
LINE/RGB
RGB/NOT
COMP /LINE
TO BB BOARD CN303
CN110 4P BLK :S-MICRO
VR
NOR/TEST
GND
RM+28V
TO QB BOARD CN104
CN114 7P WHT :S-MICRO
YC/VIDEO
SIRCS
RM8V
GND
POW ON/OFF
NOR/TEST
VR
TO BB BOARD CN310
CN111 9P BLK :S-MICRO
B-Y
GND
SYNC
GND
Y/VIDEO
GND
(R-Y) C
GND
YC/VIDEO
TO BA BOARD CN203
B-SS1562<U/C>-QA.

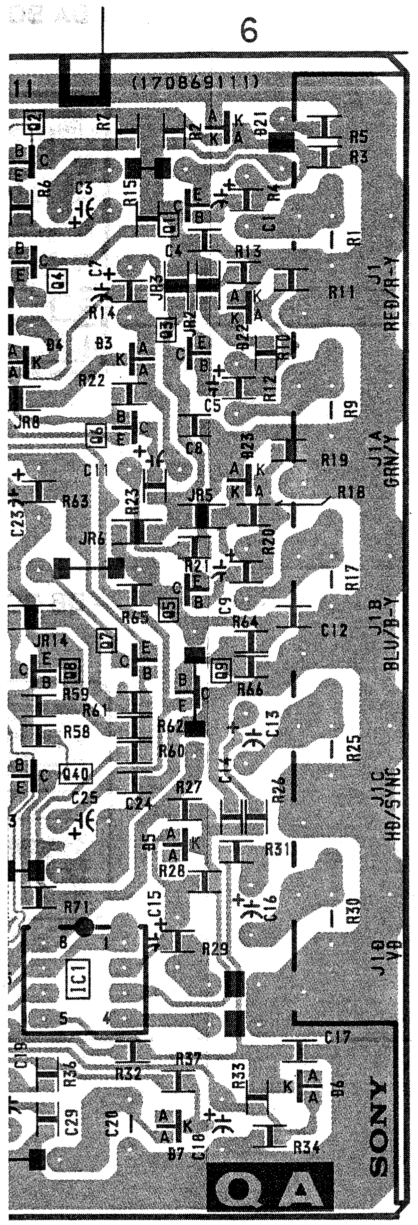
QA BOARD * MARK

	VPH-1001Q/QM	VPH-1044Q/QM		VPH-1001Q/QM	VPH-1044Q/QM		VPH-1001Q/QM	VPH-1044Q/QM
IC1	–	µPC393C	C9	–	33/16V	R33	–	1.8K
IC2	–	MC14053BF	C11	–	10/50V	R34	–	47K
IC4	–	MC14053BF	C12	–	0.047	R35	–	270
			C13	–	33/16V	R36	–	10K
Q1	–	2SC2712	C14	–	100p	R37	–	100
Q2	–	2SC2712	C15	–	100/16V	R38	–	47K
Q3	–	2SC2712	C16	–	33/16V	R39	–	47K
Q4	–	2SC2712	C17	–	100p	R40	–	56K
Q5	–	2SC2712	C18	–	100/16V	R41	–	1K
Q6	–	2SC2712	C19	–	10/50V	R42	–	1K
Q7	–	2SC2712	C20	–	0.033	R43	–	1K
Q8	–	2SC2712	C21	–	100/16V	R53	–	1K
Q9	–	2SA1162	C22	–	0.047	R54	–	1K
Q19	–	DTC144EK	C23	–	330/16V	R55	–	27
Q20	–	DTC144EK	C24	–	0.047	R56	–	27
Q40	–	DTC144EK	C25	–	330/16V	R57	–	27
Q41	–	2SC2712	C60	–	47/50V	R58	–	220K
Q42	–	2SC2712	C61	–	47/50V	R59	–	47K
Q43	–	2SC2712	C62	–	0.01	R60	–	6.8K
Q44	–	2SC2712	C63	–	47/50V	R61	–	820
Q45	–	2SC2712	C64	–	47/50V	R62	–	12K
Q46	–	2SC2712				R63	–	680
Q47	–	DTC144EK	R1	–	75	R64	–	6.8K
			R2	–	27K	R65	–	680
D1	–	1S2837	R3	–	56K	R66	–	6.8K
D2	–	1S2837	R4	–	100	R71	–	10K
D3	–	1S2835	R5	–	2.2K	R75	47	–
D4	–	1S2837	R6	–	100	R90	–	10K
D5	–	1S2837	R7	–	10	R117	–	1044Q 470 1044QM 1.1K
D6	–	1S2837	R8	–	680			
D7	–	1S2837	R9	–	75	R125	–	1K
D10	–	1S2837	R10	–	27K	R130	–	22K
D21	–	1SS123	R11	–	56K	R131	–	1.5K
D22	–	1SS123	R12	–	100	R132	–	360
D23	–	1SS123	R13	–	2.2K	R133	–	1K
			R14	–	100	R134	–	470
DL1	–	DELAY LINE	R15	–	10	R135	–	4.7K
DL2	–	DELAY LINE	R16	–	680	R136	–	22K
			R17	–	75	R137	–	1.8K
J1	–	INPUT/OUTPUT	R18	–	27K	R138	–	360
			R19	–	56K	R139	–	1K
TP1	–	R	R20	–	100	R140	–	470
TP2	–	G	R21	–	2.2K	R141	–	4.7K
TP3	–	B	R22	–	100	R142	–	360
TP8	–	RGB/$\overline{\text{LINE}}$	R23	–	10	R143	–	560
TP10	–	G-SYNC	R24	–	680	R144	–	360
TP13	–	B-Y	R25	–	75	R145	–	1044Q 620 1044QM 1.3K
			R26	–	1K			
C1	–	33/16V	R27	–	68K	R148	–	22K
C3	–	10/50V	R28	–	1.8K	R149	–	22K
C4	–	0.047	R29	–	47K	R150	–	5.6K
C5	–	33/16V	R30	–	75	R151	–	47
C7	–	10/50V	R31	–	1K	R152	–	47
C8	–	0.047	R32	–	68K	R153	–	390

QA [Y/C VIDEO SW, REG]

– QA BOARD –


1
2
3
4
5
6
A
B
C
D
E
1-652-402-11
CN116
CN115
CN117
CN107
CN109
CN112
CN118
CN110
CN113
CN114
CN108
CN111
IC10
IC7
IC6
IC9
IC8
IC3
IC4
IC2
IC1
TP9
TP6
TP7
TP8
TP11
TP12
TP4
TP13
TP10
TP5
QA


6
(1708691 1 1)
J1A GRN/Y
J1B BLU/B-Y
J1C HD/SYNC
J1D VD
RED/R-Y
SONY
QA

QA BOARD

IC	
IC1	D-5
IC2	E-4
IC3	C-3
IC4	D-4
IC6	A-4
IC7	A-3
IC8	C-2
IC9	B-1
IC10	A-3

TRANSISTOR	
Q1	A-6
Q2	A-5
Q3	B-6
Q4	A-5
Q5	C-6
Q6	B-6
Q7	C-6
Q8	C-5
Q9	C-6
Q10	D-2
Q11	D-2
Q12	E-3
Q13	E-3
Q14	E-3
Q15	B-3
Q16	D-3
Q17	D-3
Q18	D-3
Q19	D-5
Q20	D-5
Q21	C-2
Q22	C-1
Q23	B-2
Q24	B-1
Q25	D-3
Q26	C-3
Q27	B-3
Q28	D-5
Q29	C-3
Q30	C-3
Q40	C-5
Q41	C-4
Q42	C-4
Q43	C-4
Q44	C-5
Q45	C-5
Q46	C-4
Q47	C-5

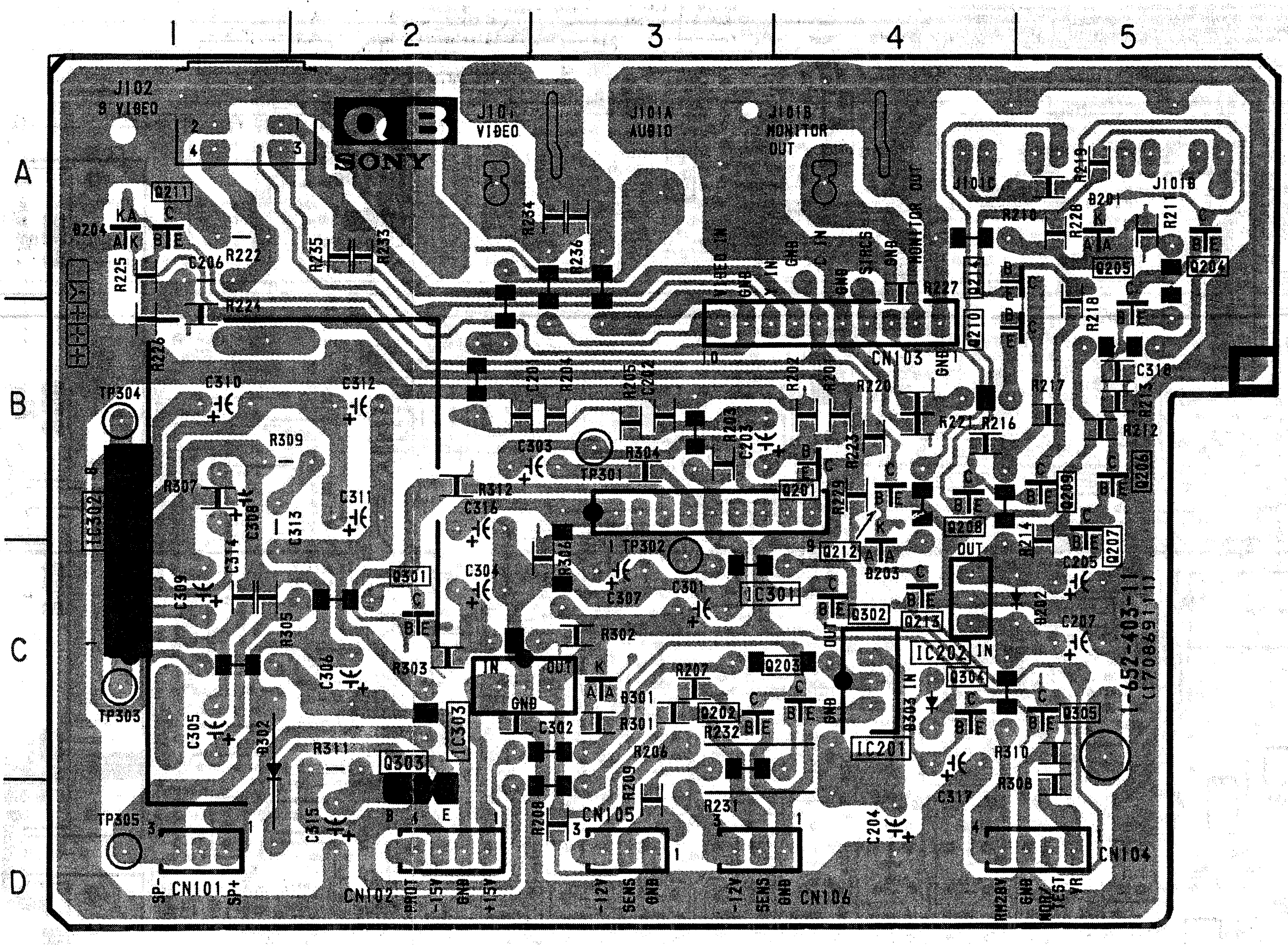
DIODE	
D1	A-5
D2	A-5
D3	B-6
D4	B-5
D5	D-6
D6	E-6
D7	E-6
D8	D-2
D9	B-3
D10	D-4
D11	A-3
D12	D-2
D13	C-2
D14	C-1
D15	B-2
D16	B-2
D17	A-3
D18	A-2
D19	C-1
D20	C-2
D21	A-6
D22	B-6
D23	B-6

TEST POINT	
TP1	A-5
TP2	A-5
TP3	B-4
TP4	D-2
TP5	E-1
TP6	B-1
TP7	B-2
TP8	B-2
TP9	B-1
TP10	E-4
TP11	D-2
TP12	D-1
TP13	E-2

QB

[LINE INPUT, AUDIO AMP]

– QB BOARD –


1
2
3
4
5
A
B
C
D
J102 8 VIDEO
J101 VIDEO
J101A AUDIO
J101B MONITOR OUT
QB SONY
CN103
CN101
CN102
CN104
CN105
CN106
TP301
TP302
TP304
TP305
IC201
IC202
IC301
IC302
IC303
1-652-403-11
(1708691 1)

QB BOARD

IC	
IC201	C-4
IC202	C-4
IC301	B-3
IC302	B-1
IC303	C-2

TRANSISTOR	
Q201	B-4
Q202	C-3
Q203	C-4
Q204	A-5
Q205	A-5
Q206	B-5
Q207	B-5
Q208	B-4
Q209	B-5
Q210	B-4
Q211	A-1
Q212	B-4
Q213	C-4
Q214	A-4
Q301	C-2
Q302	C-4
Q303	C-2
Q304	C-4
Q305	C-5

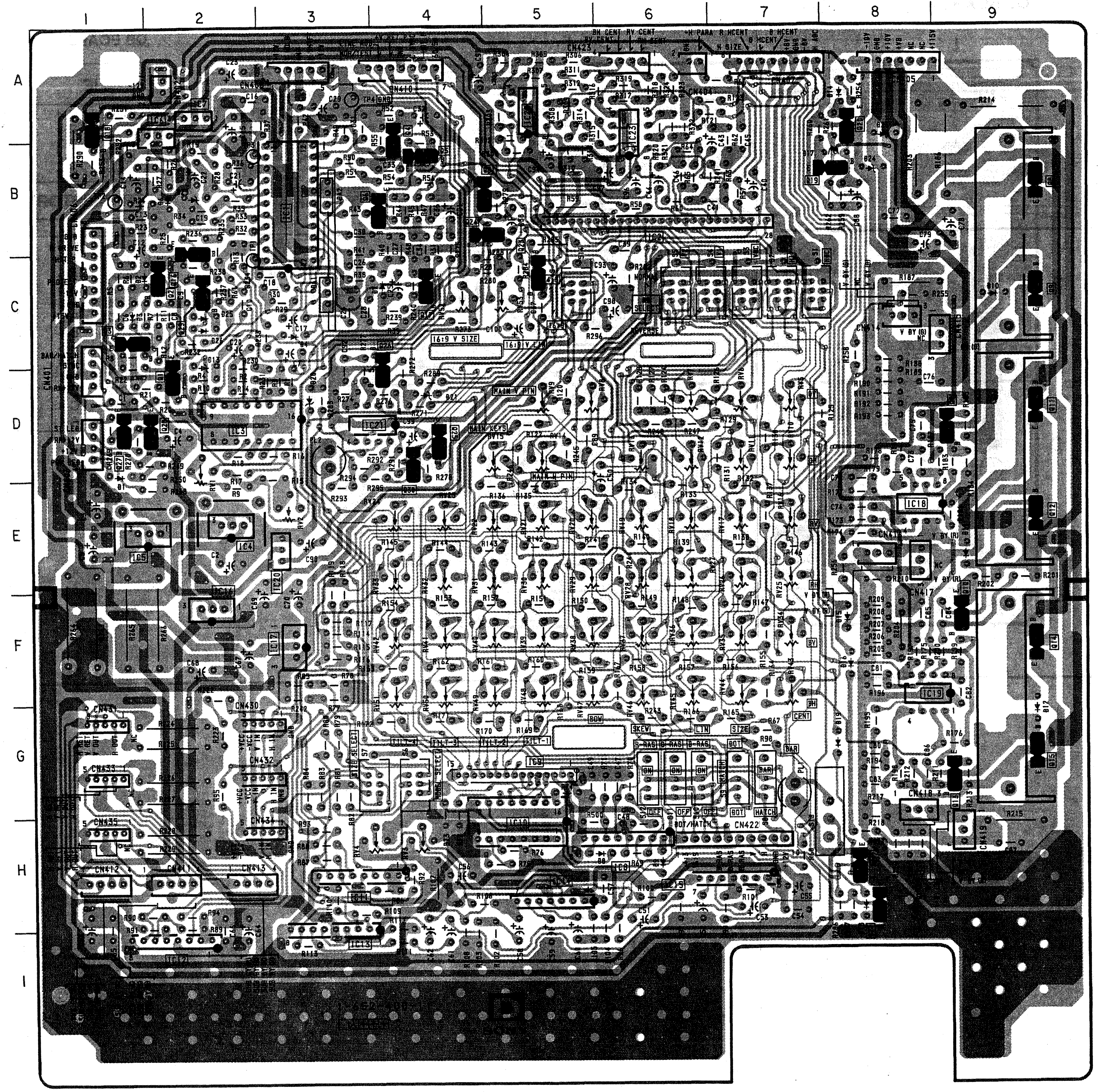
DIODE	
D201	A-5
D202	C-4
D203	C-4
D204	A-1
D301	C-3
D302	C-1
D303	C-4

TEST POINT	
TP301	B-3
TP302	C-3
TP303	C-1
TP304	B-1
TP305	D-1

D

[RGB PROCESSOR, HV BLK. BAL.]

- D BOARD -

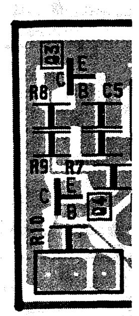


D BOARD

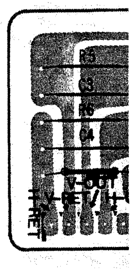
IC	
IC1	B-3
IC2	B-6
IC3	D-2
IC4	E-2
IC5	E-1
IC6	A-2
IC7	A-2
IC8	H-6
IC9	G-5
IC10	H-5
IC11	H-3
IC12	I-2
IC13	I-3
IC14	H-5
IC15	H-6
IC16	F-2
IC17	F-3
IC18	E-8
IC19	F-8
IC20	E-3
IC21	D-3
IC22	A-5
IC23	A-6
TRANSISTOR	
Q1	D-2
Q2	C-2
Q3	C-1
Q4	A-4
Q5	B-4
Q6	B-4
Q7	D-8
Q8	B-9
Q9	C-9
Q10	F-9
Q11	D-9
Q12	E-9
Q13	G-9
Q14	F-9
Q15	G-9
Q16	C-2
Q17	C-4
Q18	A-1
Q19	B-8
Q20	A-8
Q21	H-8
Q22	H-8
Q23	C-5
Q24	B-4
Q25	D-4
Q26	C-4
Q27	D-1
Q28	D-2
Q30	D-4
Q31	B-5
DIODE	
D1	D-1
D2	C-1
D3	C-1
D4	C-3
D6	B-2
D7	C-4
D8	H-5
D9	H-6
D10	C-9
D11	E-9
D12	G-9
D13	D-2
D14	A-8
D15	F-8
D16	F-8
D17	B-8
D18	H-8
D19	G-8
D20	D-3
D21	D-4
D23	B-8
D24	B-8
D29	B-2
VARIABLE RESISTOR	
RV1	D-2
RV2	E-3
RV3	H-4
RV4	H-4
RV5	D-7
RV6	D-7
RV7	D-6
RV8	D-5
RV9	D-5
RV10	D-7
RV11	D-7
RV12	D-6
RV13	D-6
RV14	D-5
RV15	D-5
RV16	E-7
RV17	E-7
RV18	E-6
RV19	E-6
RV20	E-5
RV21	E-5
RV22	E-5
RV23	E-4
RV24	E-4
RV25	E-7
RV26	E-7
RV27	E-6
RV28	E-6
RV29	E-5
RV30	E-5
RV31	E-5
RV32	E-4
RV33	E-4
RV34	F-7
RV35	F-7
RV36	F-6
RV37	F-6
RV38	F-5
RV39	F-5
RV40	F-5
RV41	F-4
RV42	F-4
RV43	F-7
RV44	F-7
RV45	F-6
RV46	F-6
RV47	F-5
RV48	F-5
RV49	F-5
RV50	F-4
RV51	F-4
RV52	C-4
RV53	C-5
TEST POINT	
TP1	B-2
TP2	B-1
TP3	B-2
TP4	A-3

DA

- DA BOA



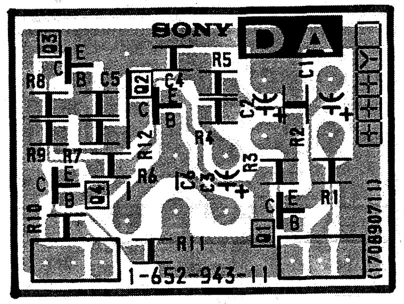
- DB BOA



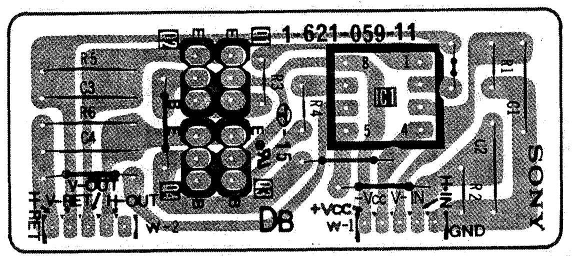
Note:
- ▩ : Pattern from the side which enables seei
- ■ : Pattern of the rear.

DA **DB** [SUB OUT]

- DA BOARD -

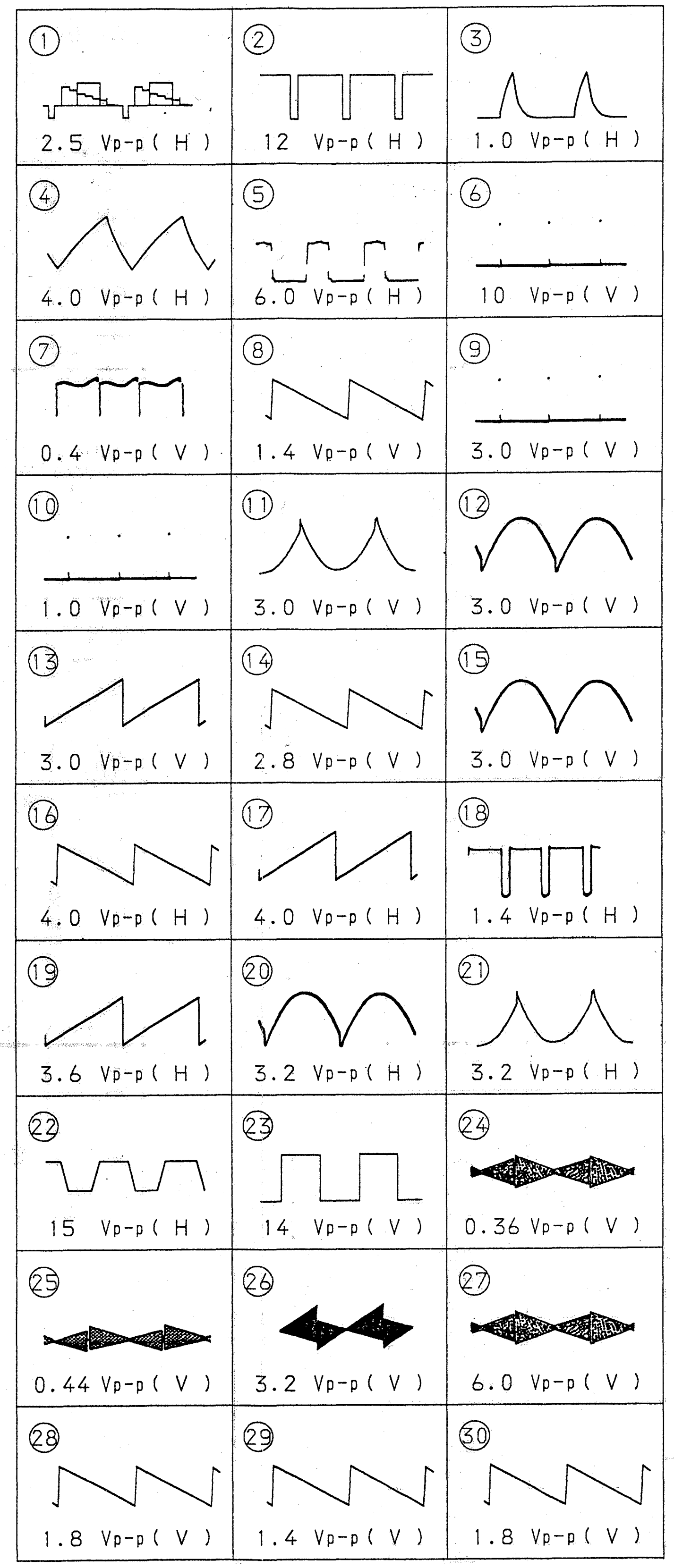

SONY
DA
1-652-943-11
R5
R8
C5
R9
R7
R6
R10
R11
R12
R4
R3
R2
R1
C1
C2
C3
C4
C6
Q1
Q2
Q3
Q4
E
B
C
Y
1-708-907-11

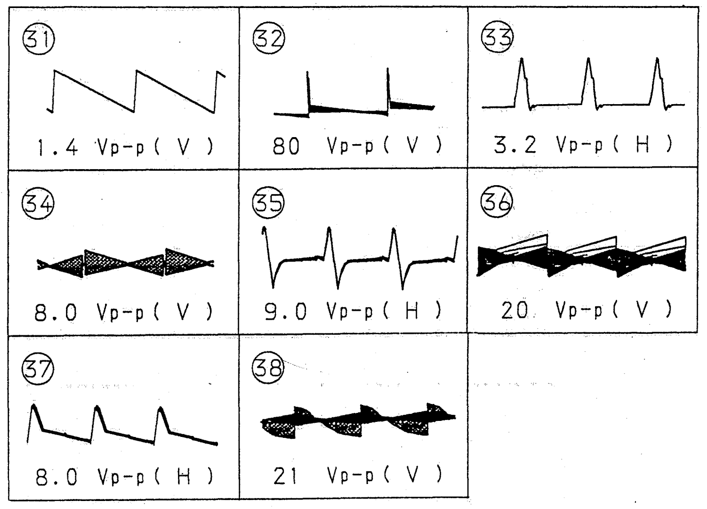
- DB BOARD -


1-621-059-11
DB
SONY
IC1
C3
C4
C5
R6
R2
R4
+Vcc
-Vcc
V-OUT
H-OUT
V-IN
H-IN
H-REF
W-1
W-2
GND

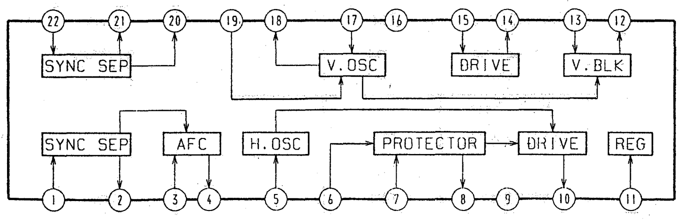
n the side which enables seeing.
he rear.

D BOARD

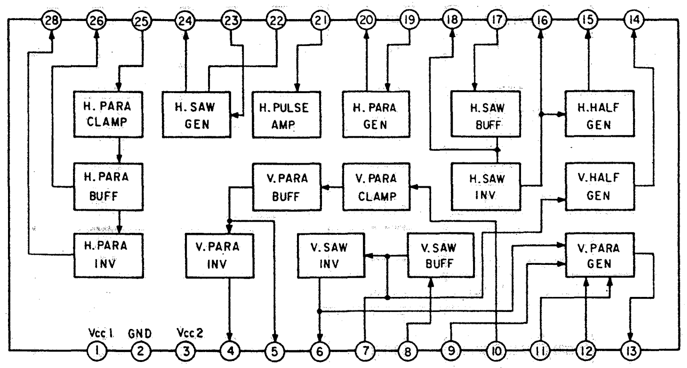




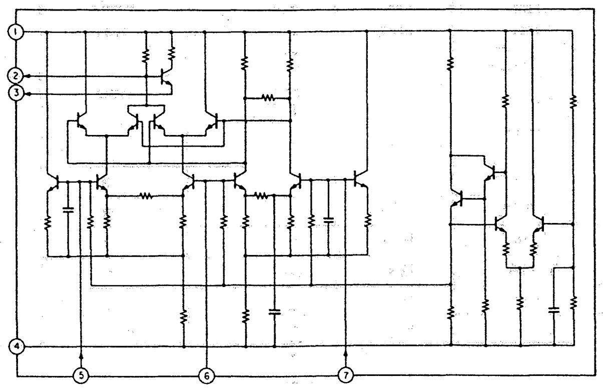
D BOARD IC1 µPC1377C

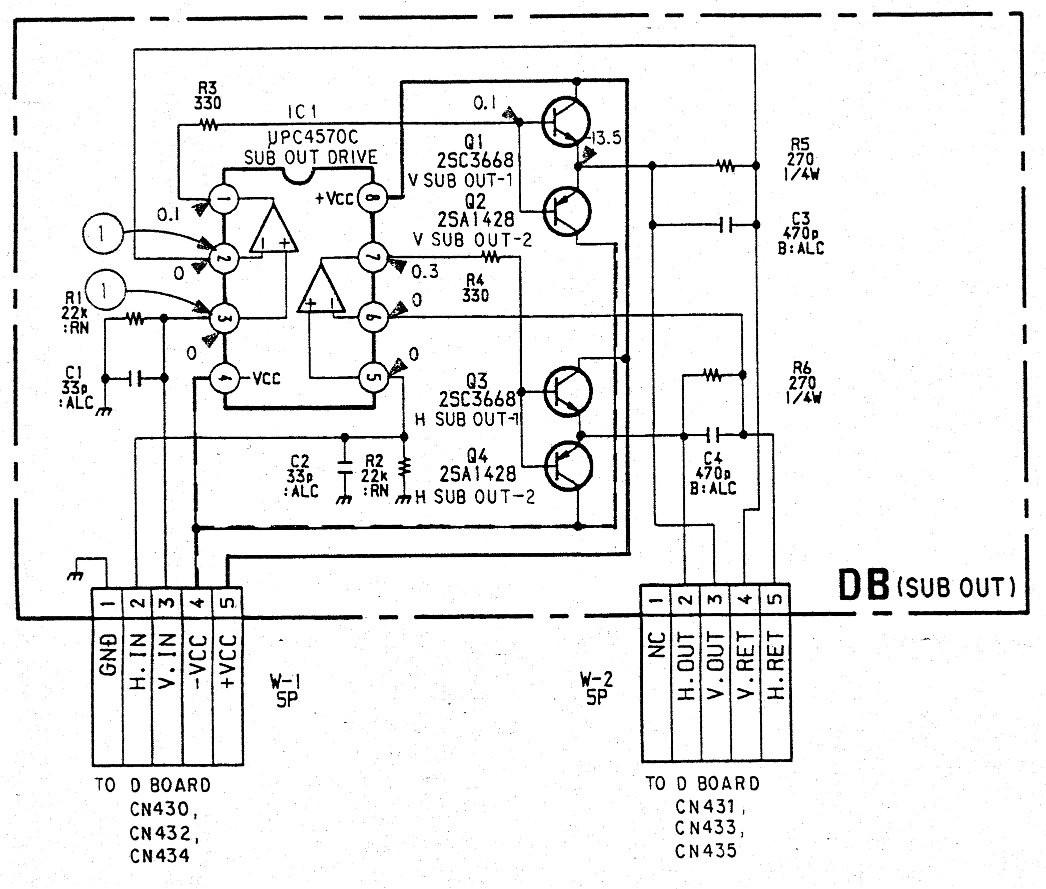

SYNC SEP
V.OSC
DRIVE
V.BLK
SYNC SEP
AFC
H.OSC
PROTECTOR
DRIVE
REG

D BOARD IC2 BX-1121


H.PARA CLAMP
H.SAW GEN
H.PULSE AMP
H.PARA GEN
H.SAW BUFF
H.HALF GEN
H.PARA BUFF
V.PARA BUFF
V.PARA CLAMP
H.SAW INV
V.HALF GEN
H.PARA INV
V.PARA INV
V.SAW INV
V.SAW BUFF
V.PARA GEN
Vcc1
GND
Vcc2

D BOARD IC15 µPC1037HA

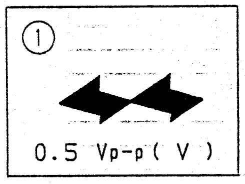



R3 330
IC1 μPC4570C SUB OUT DRIVE
+Vcc
-Vcc
Q1 2SC3668 V SUB OUT-1
Q2 2SA1428 V SUB OUT-2
Q3 2SC3668 H SUB OUT-1
Q4 2SA1428 H SUB OUT-2
R4 330
R5 270 1/4W
C3 470p B:ALC
R6 270 1/4W
C4 470p B:ALC
R1 22k :RN
C1 33p :ALC
C2 33p :ALC
R2 22k :RN
0.1
13.5
0.3
DB (SUB OUT)
GND
H.IN
V.IN
-VCC
+VCC
W-1 5P
NC
H.OUT
V.OUT
V.RET
H.RET
W-2 5P
TO D BOARD CN430, CN432, CN434
TO D BOARD CN431, CN433, CN435

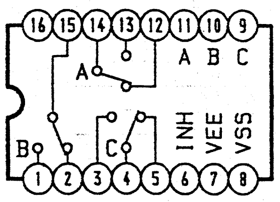
D BOARD

Ref. No.	OPERATION	Ref. No.	OPERATION
IC1	H • V OSC	Q17	V • BLK ADD
IC2	SIG GEN	Q18	−12V PROT
IC3	MODE SW	Q19	V • OUT PROT -1
IC4	+12V REG	Q20	V • OUT PROT -2
IC5	−12V REG	Q21	V • POLARITY SW
IC6	12V REG (H)	Q22	V • POLARITY SW
IC7	12V REG (V)	Q23	16 : 9 V • CENT SW
IC8	HALF H • V	Q24	V • PARA BUFF
IC9	TILT BUFF	Q25	16 : 9 V • LIN SW
IC10	TILT SW	Q26	16 : 9 V • SIZE SW
IC11	H LIN BUFF	Q27	ST LED DRIVE
IC12	V KEYS BUFF	Q28	LED SW
IC13	V • PIN AMP	Q30	V. LIN BUFF
IC14	V • PIN GEN	Q31	V. PARA SW
IC15	KEYS GEN		
IC16	+8V REG	D1	PROTECT
IC17	−8V REG	D2	H • PULSE CLIP
IC18	V AMP MAIN	D3	SPEED UP
IC19	V AMP R/B	D4	TEST H • CENT
IC20	−12V REG	D6	H • OSC • LIMIT
IC21	V • SAW AMP	D7	VD -SW
IC22	LEVEL SHIFT (B)	D8	HALF V -SW
IC23	LEVEL SHIFT (R)	D9	HALF H -SW
		D10	V • BIAS (G)
Q1	SYNC BUFF	D11	V • BIAS (R)
Q2	H • PULSE AMP	D12	V • BIAS (B)
Q3	H • PULSE BUFF	D13	SW • PROT -13
Q4	V • SAW -1	D14	V • OUT PROT -1
Q5	V • SAW -2	D15	V • OUT PROT -2
Q6	V • SIZE 50/60 SW	D16	V • OUT PROT -3
Q7	V • DRIVE G	D17	V • OUT PROT -4
Q8	V • OUT (G) -1	D18	STOPPER
Q9	V • OUT (G) -2	D19	STOPPER
Q10	V • DRIVE -R	D20	LEVEL SHIFT
Q11	V • OUT (R) -1	D21	LEVEL SHIFT
Q12	V • OUT (R) -2	D23	PROTECTOR
Q13	V • DRIVE -B	D24	PROTECTOR
Q14	V • OUT (B) -1	D29	HOLD DOWN REG
Q15	V • OUT (B) -2		
Q16	PAL • H • CENT		

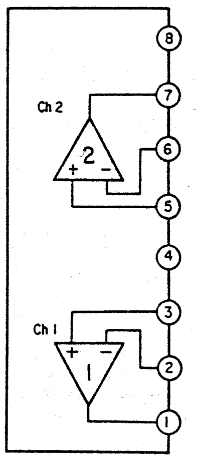
DB BOARD



D BOARD IC3 MC14053BCP


16 15 14 13 12 11 10 9
A B C
INH
VEE
VSS
1 2 3 4 5 6 7 8

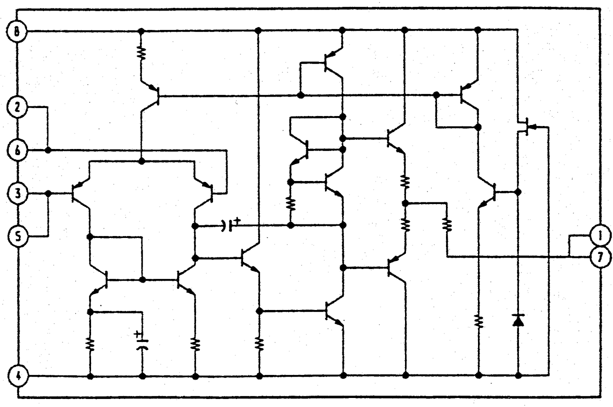
D BOARD IC8, 11, 12, 13 M5218AL


Ch 2
Ch 1
8 7 6 5 4 3 2 1

DA BOARD

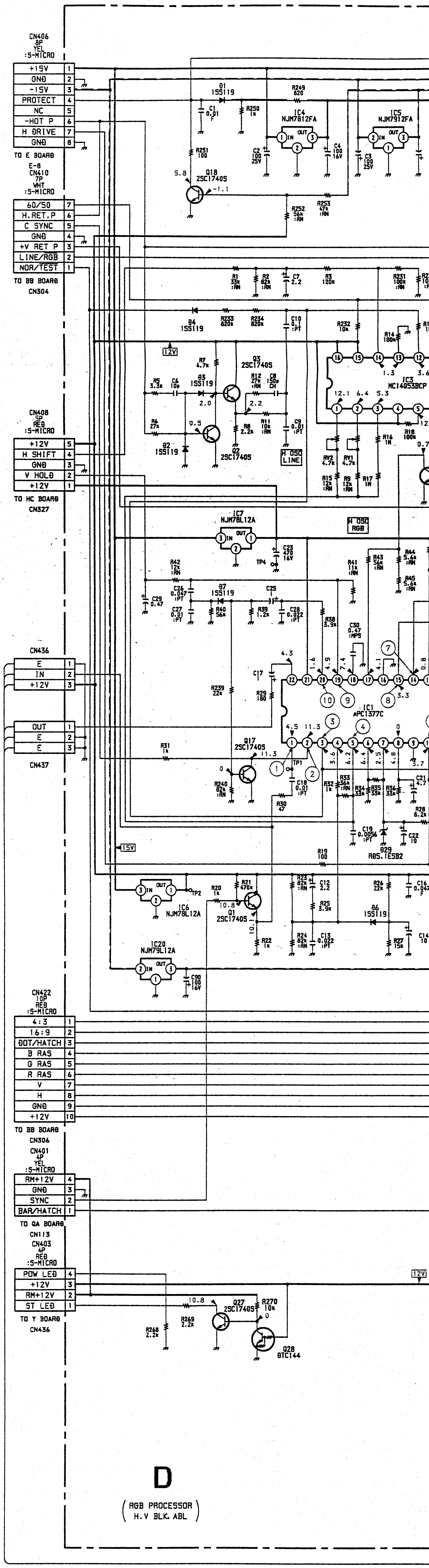
Ref. No.	OPERATION
Q1	V CLAMP
Q2	V SEP
Q3	VP SW
Q4	V BUFF

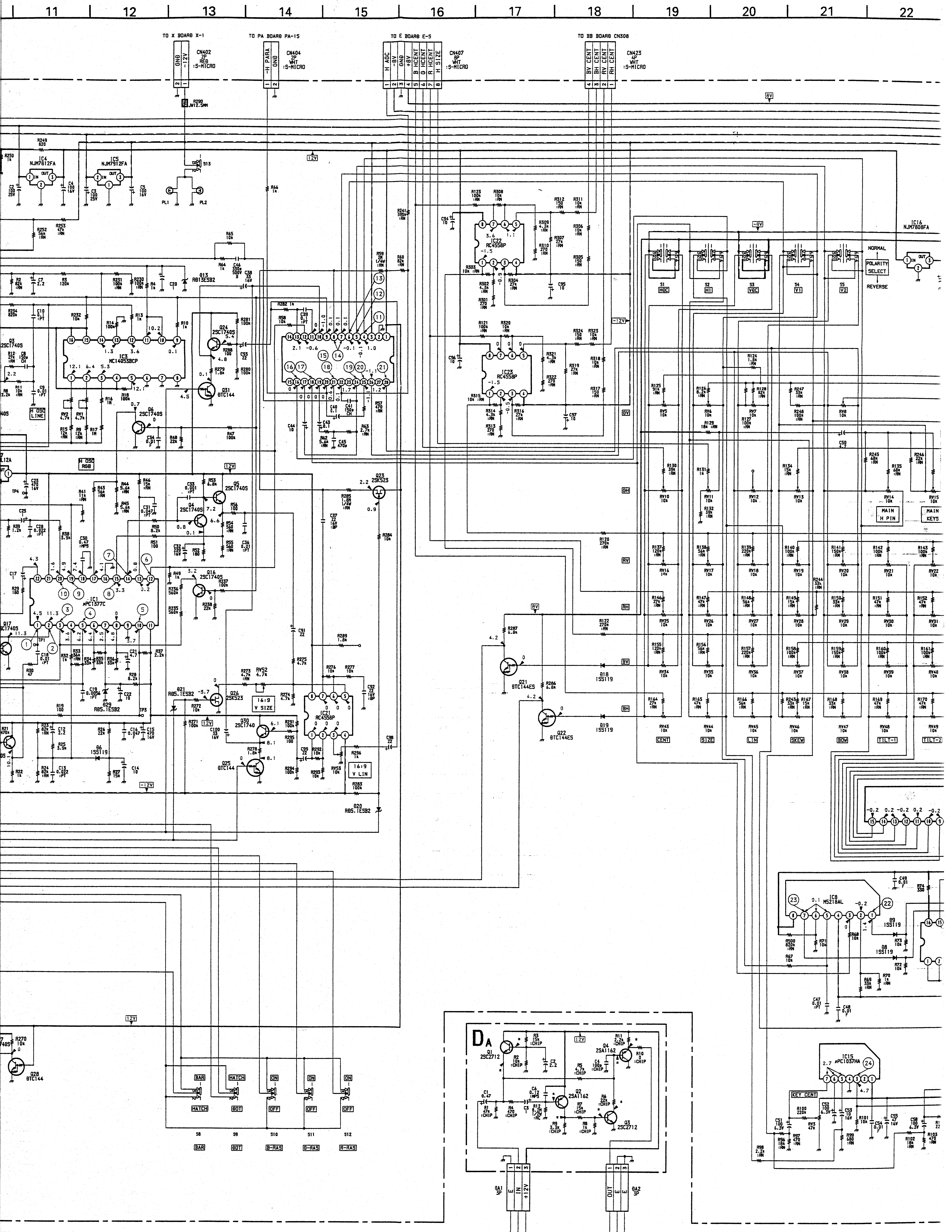
D BOARD IC18, 19, 21, 22, 23 RC4558P

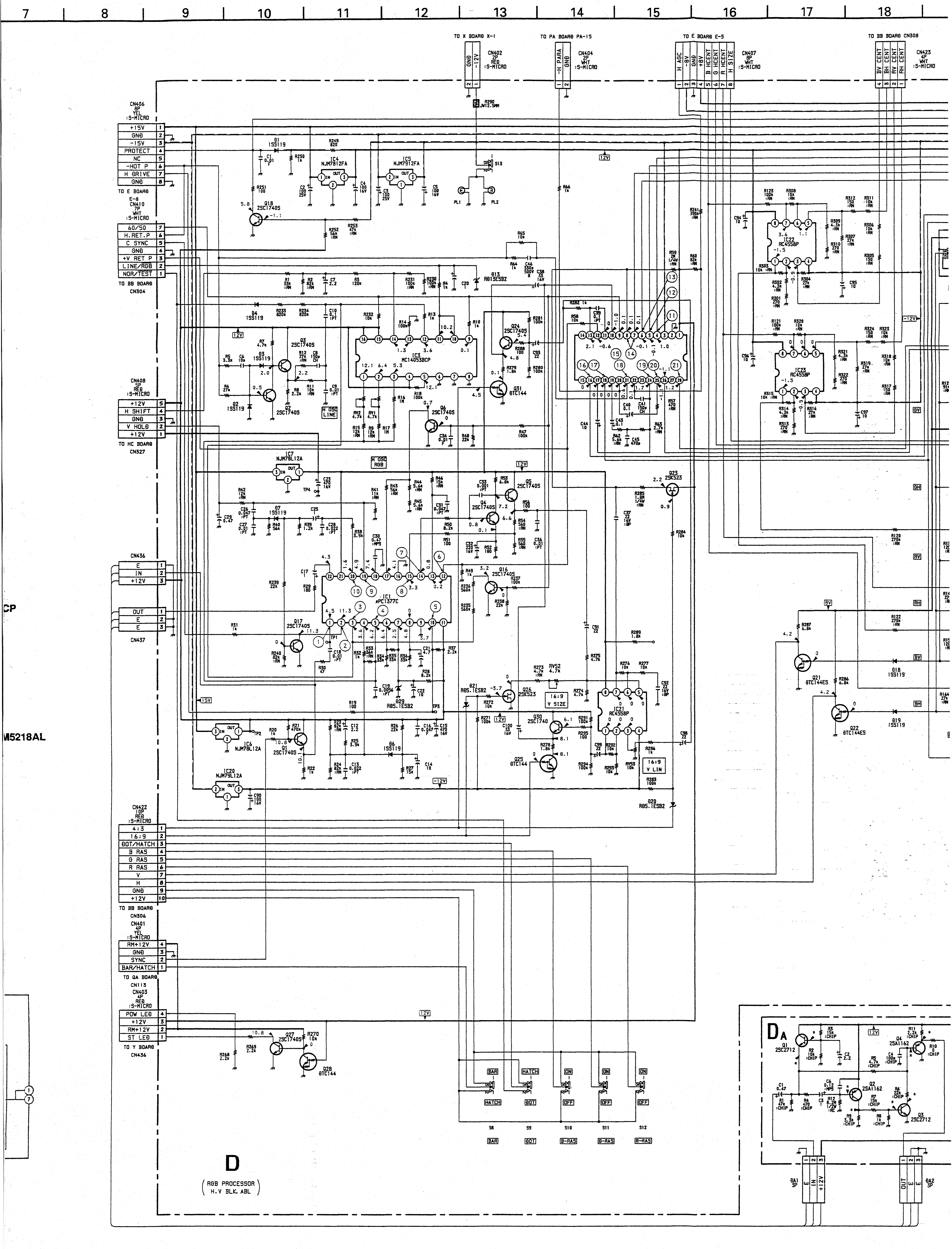


DB BOARD

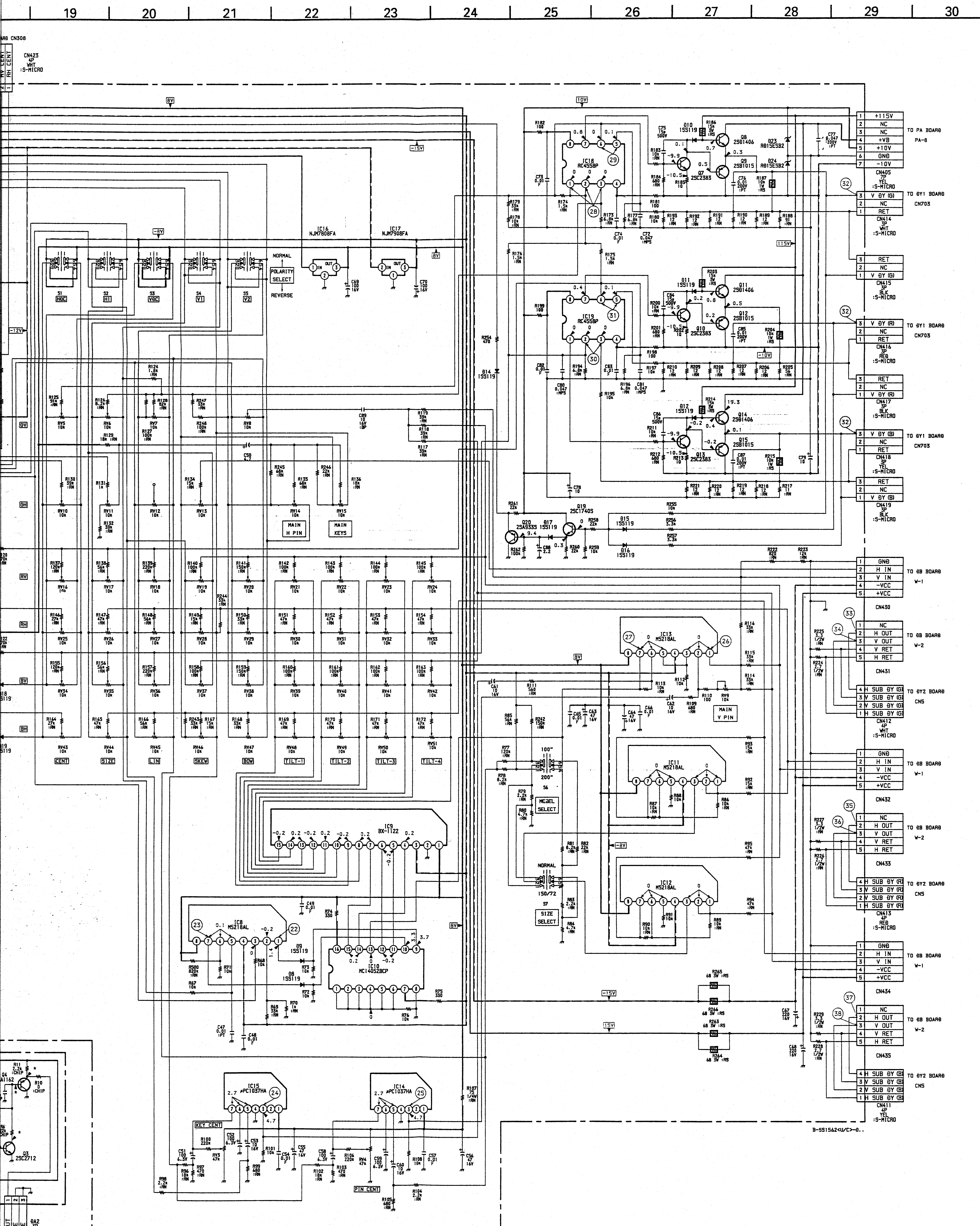
Ref. No.	OPERATION
IC1	SUB OUT DRIVE
Q1	V SUB OUT -1
Q2	V SUB OUT -2
Q3	H SUB OUT -1
Q4	H SUB OUT -2

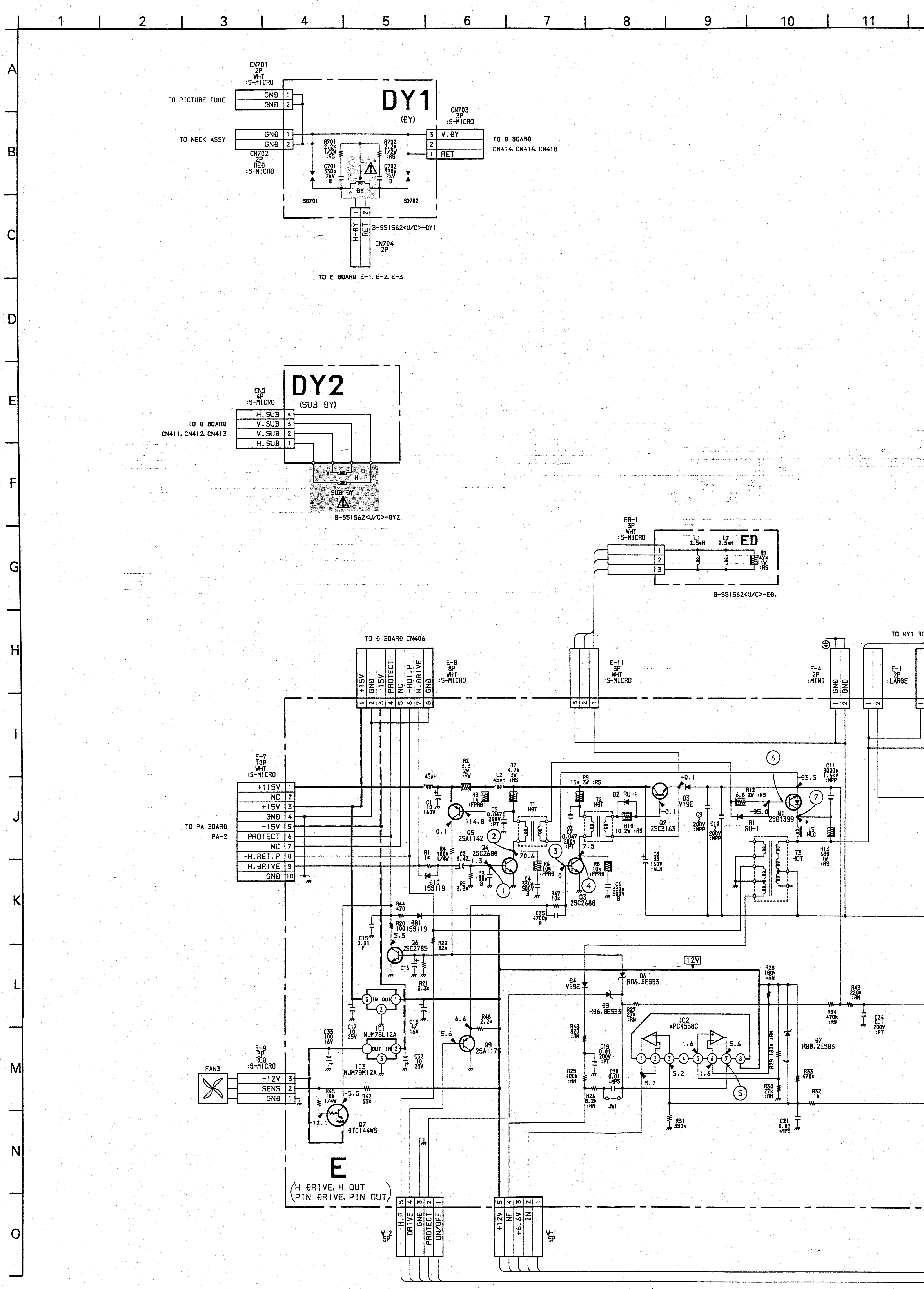

CN406 8P YEL :S-MICRO
+15V
GND
-15V
PROTECT
NC
-HOT P
H DRIVE
GND
TO E BOARD E-8
CN410 7P WHT :S-MICRO
60/50
H.RET.P
C SYNC
GND
+V RET P
LINE/RGB
NOR/TEST
TO BB BOARD CN304
IC4 NJM7812FA
IC5 NJM7912FA
Q18 2SC1740S
IC3 MC14053BCP
CN408 5P RED :S-MICRO
+12V
H SHIFT
GND
V HOLD
+12V
TO HC BOARD CN327
IC7 NJM78L12A
CN436
E
IN
+12V
OUT
E
E
CN437
IC1 μPC1377C
Q17 2SC1740S
IC6 NJM78L12A
IC20 NJM79L12A
Q1 2SC1740S
CN422 10P RED :S-MICRO
4:3
16:9
BOT/HATCH
B RAS
G RAS
R RAS
V
H
GND
+12V
TO BB BOARD CN306
CN401 4P YEL :S-MICRO
RM+12V
GND
SYNC
BAR/HATCH
TO QA BOARD CN113
CN403 4P RED :S-MICRO
POW LED
+12V
RM+12V
ST LED
TO Y BOARD CN436
Q27 2SC1740S
Q28 DTC144
D
(RGB PROCESSOR H.V BLK. ABL)


11
12
13
14
15
16
17
18
19
20
21
22
TO X BOARD X-1
CN402 2P RED :S-MICRO
GND
-12V
TO PA BOARD PA-15
CN404 2P WHT :S-MICRO
-H PARA
GND
TO E BOARD E-5
CN407 8P WHT :S-MICRO
H AGC
-8V
GND
+8V
B HCENT
G HCENT
R HCENT
H SIZE
TO BB BOARD CN308
CN423 4P WHT :S-MICRO
BV CENT
BH CENT
RV CENT
RH CENT
IC4 NJM7812FA
IC5 NJM7912FA
IC3 MC14053BCP
IC1 μPC1377C
IC22 RC4558P
IC23 RC4558P
IC21 RC4558P
IC16 NJM7808FA
IC8 M5218AL
IC15 μPC1037HA
NORMAL
POLARITY SELECT
REVERSE
S1 HOC
S2 H1
S3 VOC
S4 V1
S5 V2
H OSC LINE
H OSC RGB
MAIN H PIN
MAIN KEYS
16:9 V SIZE
16:9 V LIN
CENT
SIZE
LIN
SKEW
BOW
TILT-1
TILT-2
KEY CENT
BAR
HATCH
BOT
ON
OFF
S8
S9
S10
S11
S12
B-RAS
G-RAS
R-RAS
DA
Q1 2SC2712
Q2 2SA1162
Q3 2SC2712
Q4 2SA1162
BA1 3P
E
IN
+12V
OUT
BA2 3P
Q21 BTC144ES
Q22 BTC144ES
Q23 2SK523
Q25 BTC144
Q26 2SK523
Q28 BTC144
Q30 2SC1740
Q31 BTC144
12V
-12V
8V
-8V
BV
BH
RV
RH
GH

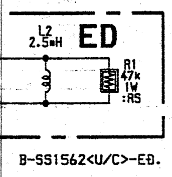


7
8
9
10
11
12
13
14
15
16
17
18
TO X BOARD X-1
CN402 2P RED :S-MICRO
GND
-12V
TO PA BOARD PA-15
CN404 2P WHT :S-MICRO
-H PARA
GND
TO E BOARD E-5
CN407 8P WHT :S-MICRO
H AGC
-8V
GND
+8V
B HCENT
G HCENT
R HCENT
H SIZE
TO BB BOARD CN308
CN423 4P WHT :S-MICRO
BV CENT
BH CENT
RV CENT
RH CENT
CN406 8P YEL :S-MICRO
+15V
GND
-15V
PROTECT
NC
-HOT P
H DRIVE
GND
TO E BOARD E-8
CN410 7P WHT :S-MICRO
60/50
H.RET.P
C SYNC
GND
+V RET P
LINE/RGB
NOR/TEST
TO BB BOARD CN304
CN408 5P RED :S-MICRO
+12V
H SHIFT
GND
V HOLD
+12V
TO HC BOARD CN327
CN436
E
IN
+12V
OUT
E
E
CN437
CN422 10P RED :S-MICRO
4:3
16:9
DOT/HATCH
B RAS
G RAS
R RAS
V
H
GND
+12V
TO BB BOARD CN306
CN401 4P YEL :S-MICRO
RM+12V
GND
SYNC
BAR/HATCH
TO QA BOARD CN113
CN403 4P RED :S-MICRO
POW LED
+12V
RM+12V
ST LED
TO Y BOARD CN436
IC4 NJM7812FA
IC5 NJM7912FA
IC3 MC14053BCP
IC1 μPC1377C
IC7 NJM78L12A
IC6 NJM78L12A
IC20 NJM79L12A
IC21 RC4558P
IC22 RC4558P
IC23 RC4558P
Q18 2SC1740S
Q1 2SC1740S
Q2 2SC1740S
Q3 2SC1740S
Q4 2SC1740S
Q5 2SC1740S
Q6 2SC1740S
Q16 2SC1740S
Q17 2SC1740S
Q24 2SC1740S
Q27 2SC1740S
Q30 2SC1740
Q23 2SK523
Q26 2SK523
Q25 DTC144
Q28 DTC144
Q31 DTC144
Q21 DTC144ES
Q22 DTC144ES
D1 1SS119
D2 1SS119
D3 1SS119
D4 1SS119
D6 1SS119
D7 1SS119
D18 1SS119
D19 1SS119
D13 RD13ESB2
D20 RD5.1ESB2
D21 RD5.1ESB2
D29 RD5.1ESB2
S13
PL1
PL2
H OSC LINE
H OSC RGB
16:9 V SIZE
16:9 V LIN
12V
-12V
-15V
8V
GV
GH
RV
RH
BV
BH
BAR
HATCH
DOT
ON
OFF
S8
S9
S10
S11
S12
B-RAS
G-RAS
R-RAS
D
(RGB PROCESSOR H.V BLK. ABL)
DA
Q1 2SC2712
Q2 2SA1162
Q3 2SC2712
Q4 2SA1162
DA1 3P
DA2 3P
CP
M5218AL

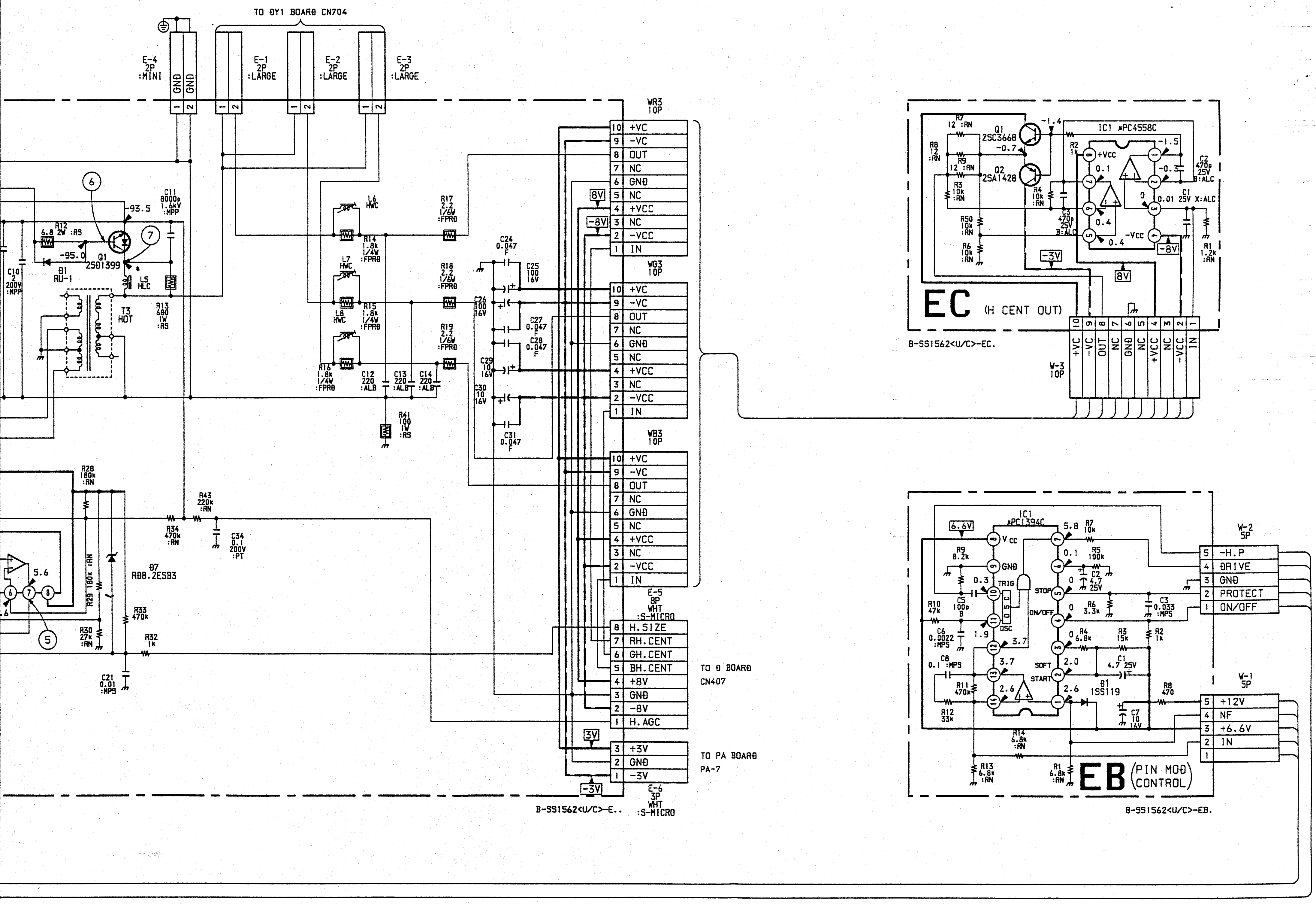

19
20
21
22
23
24
25
26
27
28
29
30
CN308
CN423 4P WHT :S-MICRO
8V
10V
-15V
-8V
IC16 NJM7808FA
IC17 NJM7908FA
NORMAL
POLARITY SELECT
REVERSE
S1 H0C
S2 H1
S3 V0C
S4 V1
S5 V2
IC18 RC4558P
IC19 RC4558P
Q8 2SD1406
Q9 2SB1015
Q7 2SC2383
Q11 2SD1406
Q12 2SB1015
Q10 2SC2383
Q14 2SD1406
Q15 2SB1015
Q13 2SC2383
Q19 2SC1740S
Q20 2SA933S
D23 RD15ESB2
D24 RD15ESB2
115V
-10V
TO PA BOARD PA-8
CN405 7P YEL :S-MICRO
+115V
NC
+VB
+10V
GND
-10V
V DY (G)
RET
TO DY1 BOARD CN703
CN414 3P WHT :S-MICRO
CN415 3P BLK :S-MICRO
V DY (R)
CN416 3P RED :S-MICRO
CN417 3P BLK :S-MICRO
V DY (B)
CN418 3P YEL :S-MICRO
CN419 3P BLK :S-MICRO
MAIN H PIN
MAIN KEYS
CENT
SIZE
LIN
SKEW
BOW
TILT-1
TILT-2
TILT-3
TILT-4
IC9 BX-1122
IC8 M5218AL
IC10 MC14052BCP
IC11 M5218AL
IC12 M5218AL
IC13 M5218AL
MAIN V PIN
MODEL SELECT
S6
S7
SIZE SELECT
NORMAL
150/72
IC15 μPC1037HA
IC14 μPC1037HA
KEY CENT
PIN CENT
TO DB BOARD W-1
GND
H IN
V IN
-VCC
+VCC
CN430
TO DB BOARD W-2
H OUT
V OUT
V RET
H RET
CN431
TO DY2 BOARD CN5
H SUB DY (G)
V SUB DY (G)
CN412 4P WHT :S-MICRO
CN432
CN433
H SUB DY (R)
V SUB DY (R)
CN413 4P RED :S-MICRO
CN434
CN435
H SUB DY (B)
V SUB DY (B)
CN411 4P YEL :S-MICRO
Q4 A1162
Q3 2SC2712
DA2 3P
OUT
B-SS1562<U/C>-0..


DY1
(DY)
CN701 2P WHT :S-MICRO
TO PICTURE TUBE
TO NECK ASSY
CN702 2P RED :S-MICRO
CN703 3P :S-MICRO
V.DY
RET
TO D BOARD CN414, CN416, CN418
R701 2.2k 1/2W :RS
R702 2.2k 1/2W :RS
C701 330p 2kV B
C702 330p 2kV B
SG701
SG702
H-DY
B-SS1562<U/C>-DY1
CN704 2P
TO E BOARD E-1, E-2, E-3
DY2
(SUB DY)
CN5 4P :S-MICRO
H.SUB
V.SUB
TO D BOARD CN411, CN412, CN413
SUB DY
B-SS1562<U/C>-DY2
ED-1 3P WHT :S-MICRO
ED
L1 2.5mH
L2 2.5mH
R1 47k 1W :RS
B-SS1562<U/C>-ED.
TO D BOARD CN406
+15V
GND
-15V
PROTECT
NC
-HOT.P
H.DRIVE
E-8 8P WHT :S-MICRO
E-11 3P WHT :S-MICRO
E-4 2P :MINI
E-1 2P :LARGE
TO DY1 BO
E-7 10P WHT :S-MICRO
+115V
-H.RET.P
TO PA BOARD PA-2
Q5 2SA1142
Q4 2SC2688
Q3 2SC2688
Q2 2SC3163
Q1 2SD1399
D3 V19E
D2 RU-1
D1 RU-1
T1 HDT
T2 HDT
T3 HOT
L5 HLC
C11 8000p 1.6kV :MPP
Q6 2SC2785
IC1 NJM78L12A
IC3 NJM79M12A
Q9 2SA1175
Q7 DTC144WS
IC2 μPC4558C
D4 V19E
D6 RD6.8ESB3
D9 RD6.8ESB3
D7 RD8.2ESB3
12V
FAN3
E-9 3P RED :S-MICRO
-12V
SENS
E
(H DRIVE, H OUT PIN DRIVE, PIN OUT)
W-2 5P
-H.P
DRIVE
PROTECT ON/OFF
W-1 5P
+12V
NF
+6.6V
IN

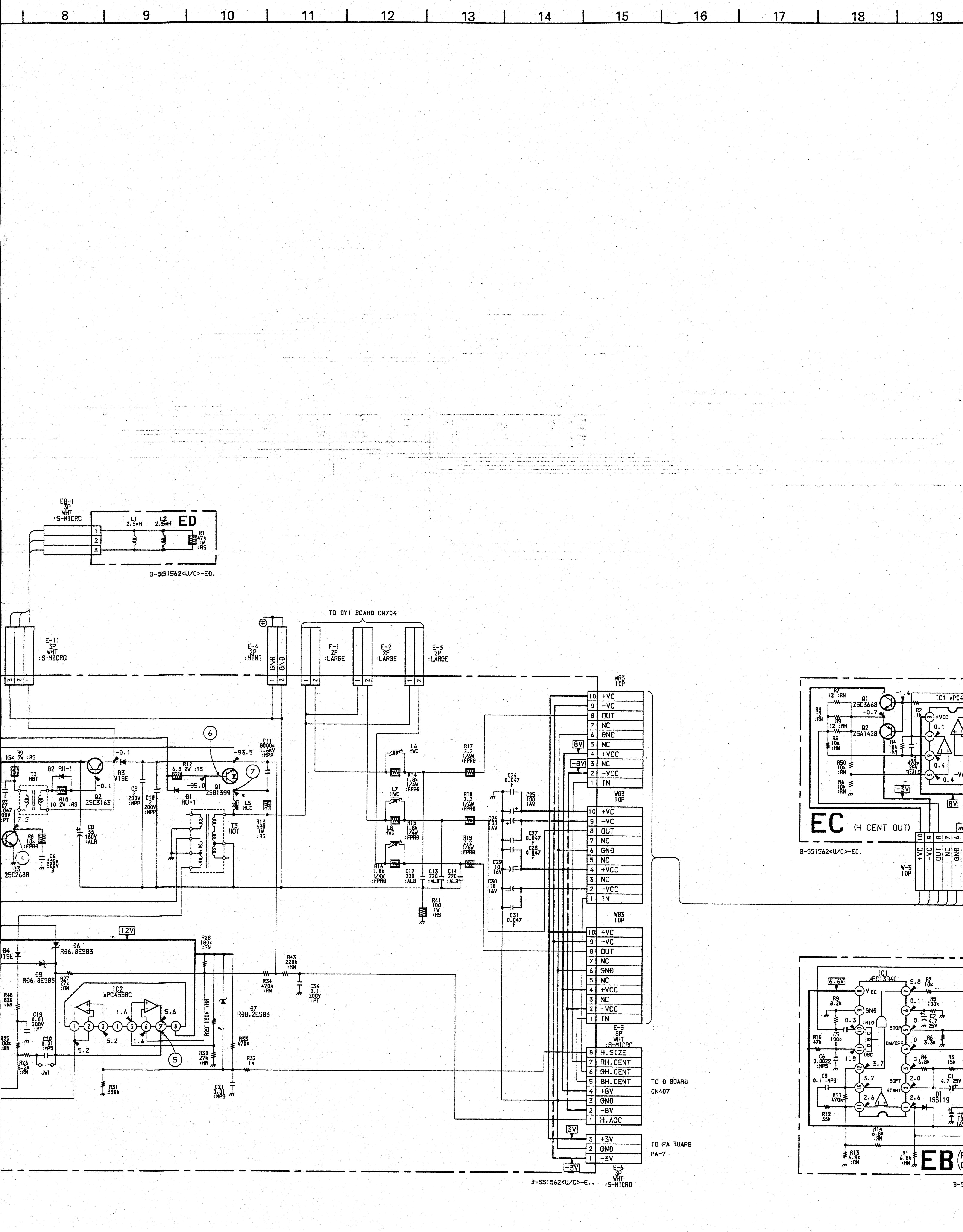
9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21



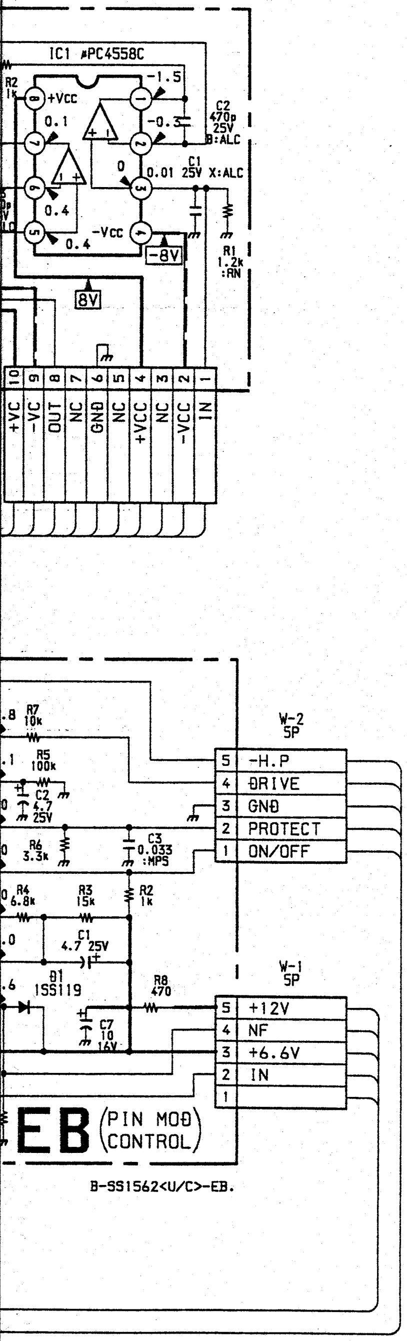
L2
2.5mH
ED
R1
47k
1W
:RS
B-SS1562<U/C>-ED.



TO DY1 BOARD CN704
E-4
2P
:MINI
E-1
2P
:LARGE
E-2
2P
:LARGE
E-3
2P
:LARGE
GND
GND
WR3
10P
+VC
-VC
OUT
NC
GND
NC
+VCC
NC
-VCC
IN
WG3
10P
WB3
10P
8V
-8V
C11
8000p
1.6kV
:MPP
-93.5
R12
2W :RS
6.8
-95.0
Q1
2SD1399
D1
RU-1
L5
HLC
C10
2
200V
:MPP
T3
HOT
R13
680
1W
:RS
L6
HWC
L7
HWC
L8
HWC
R14
1.8k
1/4W
:FPRD
R15
1.8k
1/4W
:FPRD
R16
1.8k
1/4W
:FPRD
R17
2.2
1/6W
:FPRD
R18
2.2
1/6W
:FPRD
R19
2.2
1/6W
:FPRD
C24
0.047
F
C25
100
16V
C26
100
16V
C27
0.047
F
C28
0.047
F
C29
10
16V
C30
10
16V
C31
0.047
F
C12
220
:ALB
C13
220
:ALB
C14
220
:ALB
R41
100
1W
:RS
R28
180k
:RN
R43
220k
:RN
R34
470k
:RN
C34
0.1
200V
:PT
D7
RD8.2ESB3
R29 180k :RN
R33
470k
R30
27k
:RN
R32
1k
C21
0.01
:MPS
5.6
6
7
5
E-5
8P
WHT
:S-MICRO
H.SIZE
RH.CENT
GH.CENT
BH.CENT
+8V
GND
-8V
H.AGC
TO D BOARD
CN407
3V
+3V
GND
-3V
TO PA BOARD
PA-7
-3V
E-6
3P
WHT
:S-MICRO
B-SS1562<U/C>-E..
R7
12 :RN
R8
12
:RN
R9
12 :RN
Q1
2SC3668
-0.7
-1.4
Q2
2SA1428
IC1 μPC4558C
R2
1k
+VCC
0.1
-1.5
-0.3
C2
470p
25V
B:ALC
R3
10k
:RN
R4
10k
:RN
C3
470p
25V
B:ALC
0
0.01
C1
25V X:ALC
0.4
-VCC
0.4
R50
10k
:RN
R6
10k
:RN
-3V
8V
-8V
R1
1.2k
:RN
EC
(H CENT OUT)
B-SS1562<U/C>-EC.
W-3
10P
+VC
-VC
OUT
NC
GND
NC
+VCC
NC
-VCC
IN
6.6V
IC1
μPC1394C
VCC
5.8
R7
10k
R9
8.2k
GND
0.1
R5
100k
C2
4.7
25V
TRIG
0.3
STOP
C5
100p
R10
47k
ON/OFF
0
R6
3.3k
C3
0.033
:MPS
C6
0.0022
:MPS
1.9
OSC
3.7
R4
6.8k
R3
15k
R2
1k
C8
0.1 :MPS
3.7
SOFT
2.0
C1
4.7 25V
START
R11
470k
2.6
2.6
D1
1SS119
R8
470
C7
10
16V
R12
33k
R14
6.8k
:RN
R13
6.8k
:RN
R1
6.8k
:RN
EB
(PIN MOD CONTROL)
B-SS1562<U/C>-EB.
W-2
5P
-H.P
DRIVE
GND
PROTECT
ON/OFF
W-1
5P
+12V
NF
+6.6V
IN


8
9
10
11
12
13
14
15
16
17
18
19
ED-1 3P WHT :S-MICRO
ED
L1 2.5mH
L2 2.5mH
R1 47k 1W :RS
B-SS1562<U/C>-ED.
TO DY1 BOARD CN704
E-11 3P WHT :S-MICRO
E-4 2P :MINI
E-1 2P :LARGE
E-2 2P :LARGE
E-3 2P :LARGE
GND
WR3 10P
WG3 10P
WB3 10P
+VC
-VC
OUT
NC
GND
+VCC
-VCC
IN
8V
-8V
12V
3V
-3V
Q1 2SD1399
Q2 2SC3163
Q3 2SC2688
D2 RU-1
D1 RU-1
D3 V19E
D4 V19E
D6 RD6.8ESB3
D7 RD8.2ESB3
D9 RD6.8ESB3
T2 HOT
T3 HDT
L5 HLC
L6 HWC
L7 HWC
L8 HWC
IC2 μPC4558C
C11 8000p 1.6kV :MPP
R12 2W :RS
R13 680 1W :RS
R14 1.8k 1/4W :FPRD
R15 1.8k 1/4W :FPRD
R16 1.8k 1/4W :FPRD
R17 2.2 1/6W :FPRD
R18 2.2 1/6W :FPRD
R19 2.2 1/6W :FPRD
R41 100 1W :RS
R43 220k :RN
R34 470k :RN
C34 0.1 200V :PT
R28 180k :RN
R29 180k :RN
R30 27k :RN
R31 390k
R32 1k
R33 470k
C21 0.01 :MPS
R27 27k :RN
R26 8.2k :RN
JW1
C19 0.01 200V :PT
C20 0.01 :MPS
R48 820 :RN
C24 0.047 F
C25 100 16V
C26 100 16V
C27 0.047 F
C28 0.047 F
C29 10 16V
C30 10 16V
C31 0.047 F
C12 220 :ALB
C13 220 :ALB
C14 220 :ALB
C8 33 160V :ALR
C9 200V :MPP
C10 2 200V :MPP
C6 330p 500V B
R8 10k :FPRD
R9 15k 3W :RS
R10 10 2W :RS
-0.1
-93.5
-95.0
7.5
1.6
5.6
5.2
E-5 8P WHT :S-MICRO
H.SIZE
RH.CENT
GH.CENT
BH.CENT
+8V
-8V
H.AGC
TO D BOARD CN407
+3V
TO PA BOARD PA-7
E-6 3P WHT :S-MICRO
B-SS1562<U/C>-E..
EC (H CENT OUT)
Q1 2SC3668
Q2 2SA1428
IC1 μPC4
R7 12 :RN
R8 12 :RN
R9 12 :RN
R3 10k :RN
R50 10k :RN
R6 10k :RN
R4 10k :RN
C3 470p 25V B:ALC
-1.4
-0.7
0.1
0.4
B-SS1562<U/C>-EC.
W-3 10P
EB
IC1 μPC1394C
6.6V
Vcc
GND
TRIG
OSC
STOP
ON/OFF
SOFT START
R9 8.2k
R10 47k
C5 100p B
C6 0.0022 :MPS
C8 0.1 :MPS
R11 470k
R12 33k
R13 6.8k :RN
R14 6.8k :RN
R1 6.8k :RN
R7 10k
R5 100k
C2 4.7 25V
R6 3.3k
R4 6.8k
R3 15k
C1 4.7 25V
D1 1SS119
5.8
0.3
1.9
3.7
2.6
2.0

19 | 20 | 21 | 22


IC1 μPC4558C
R2
1k
+VCC
0.1
-1.5
-0.3
C2
470p
25V
B:ALC
0
0.01
C1
25V
X:ALC
0.4
0.4
-Vcc
-8V
R1
1.2k
:RN
8V
10
9
8
7
6
5
4
3
2
1
+VC
-VC
OUT
NC
GND
NC
+VCC
NC
-VCC
IN
R7
10k
R5
100k
C2
4.7
25V
R6
3.3k
C3
0.033
:MPS
R4
6.8k
R3
15k
R2
1k
C1
4.7 25V
D1
1SS119
R8
470
C7
10
16V
W-2
5P
5 -H.P
4 DRIVE
3 GND
2 PROTECT
1 ON/OFF
W-1
5P
5 +12V
4 NF
3 +6.6V
2 IN
1
EB (PIN MOD CONTROL)
B-SS1562<U/C>-EB.

E BOARD

Ref. No.	OPERATION
IC1	12V REG
IC2	H • PIN AMP
IC3	+12V REG
Q1	H • OUT
Q2	H • PIN OUT
Q3	H • PIN DRIVE
Q4	H • OUT DRIVE
Q5	H • PIN OLD
Q6	PROTECT SW -1
Q7	PROTECT SW -2
Q9	H • PIN BUFF
D1	SPEED UP -1
D2	SPEED UP -2
D3	−100V CLAMP
D4	PULSE CLAMP
D6	6.8V ZENER
D7	H • PIN PROT -1
D8	12V REG PROT
D9	H • PIN PROT -2
D10	SPEED UP -3

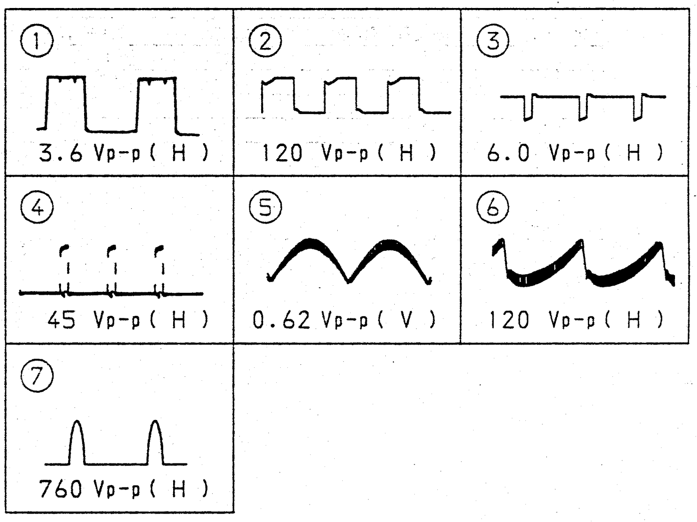
EB BOARD

Ref. No.	OPERATION
IC1	H. PIN. CONT
D1	PROT

EC BOARD

Ref. No.	OPERATION
IC1	H. CENT DRIVE
Q1	H. CENT. OUT -1
Q2	H. CENT. OUT -2

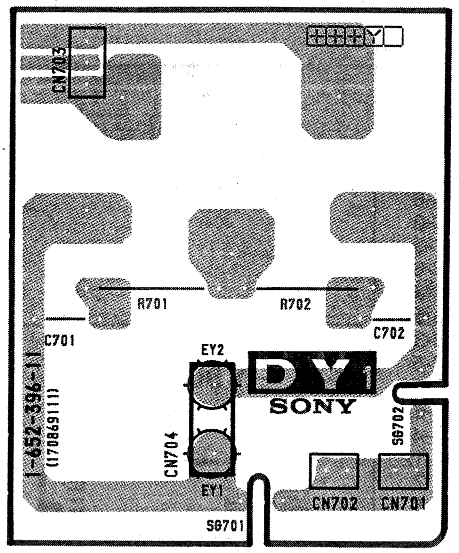
E BOARD



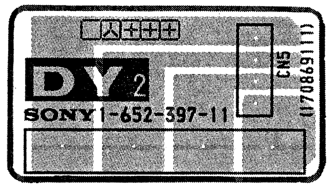
DY1 [DY] **DY2** [SUB DY]

E [H DRIVE, H OUT, PIN DRIVE, PIN OUT] **EB** [PIN MODE CONTROL] **EC** [H CENT OUT] **ED**

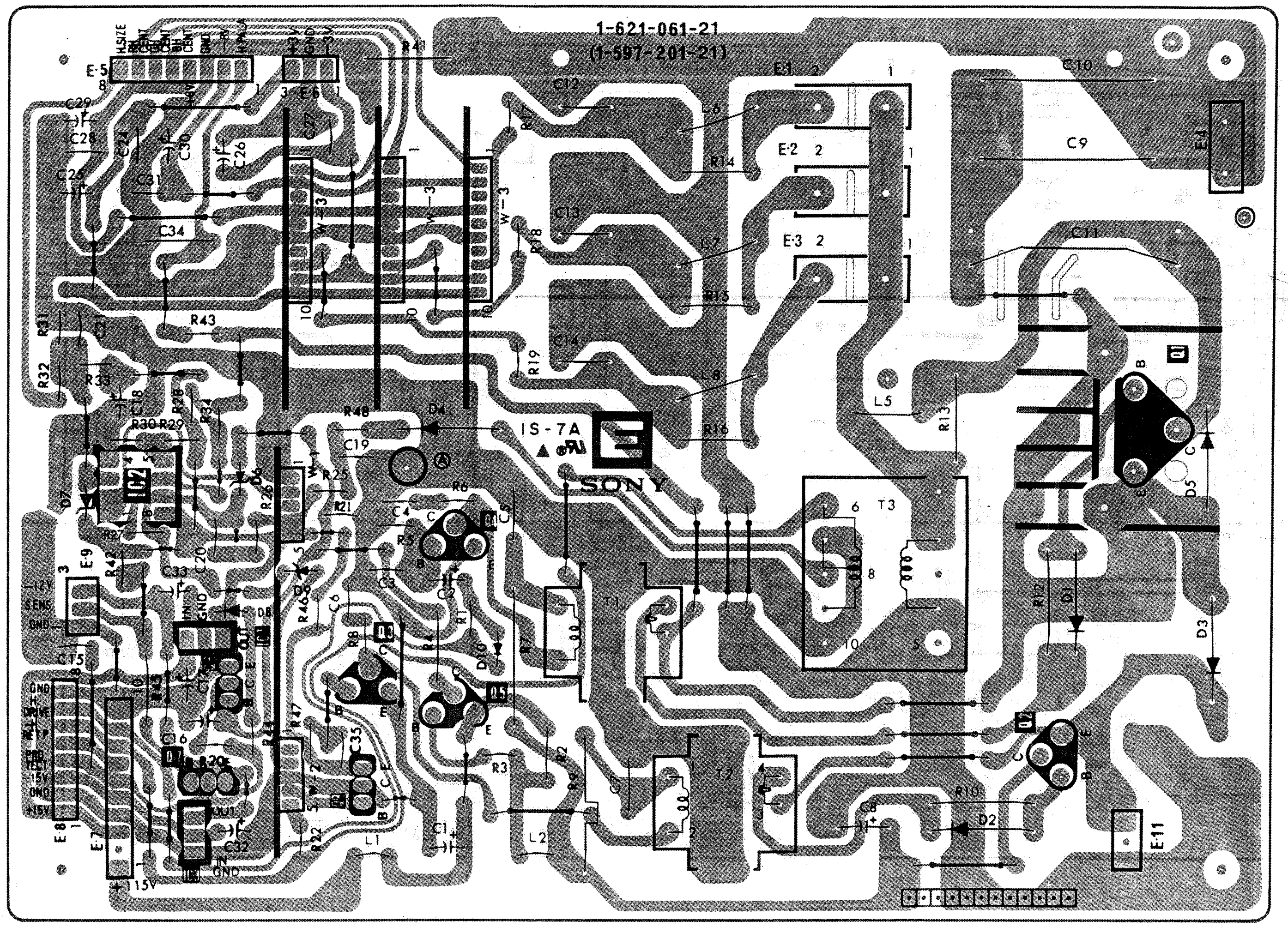
– DY1 BOARD –


CN703
R701
R702
C701
C702
EY2
EY1
CN704
CN702
CN701
S0701
S0702
1-652-396-11
(170869111)
DY1
SONY

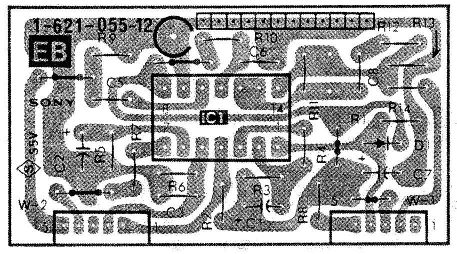
– DY2 BOARD –


DY2
SONY 1-652-397-11
CN5
(170869111)

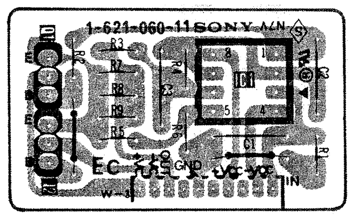
– E BOARD –


1-621-061-21
(1-597-201-21)
IS-7A
E
SONY
E-1
E-2
E-3
E-4
E-5
E-6
E-7
E-8
E-9
E-11
C9
C10
C11
C12
C13
C14
L5
T1
T2
T3
R41
R43
R14
R15
R16
L7
L8
D1
D2
D3
D4
D5
L1
L2
+115V
GND

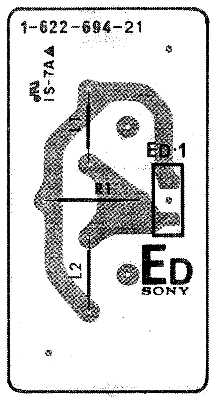
– EB BOARD –


1-621-055-12
EB
SONY
IC1

– EC BOARD –

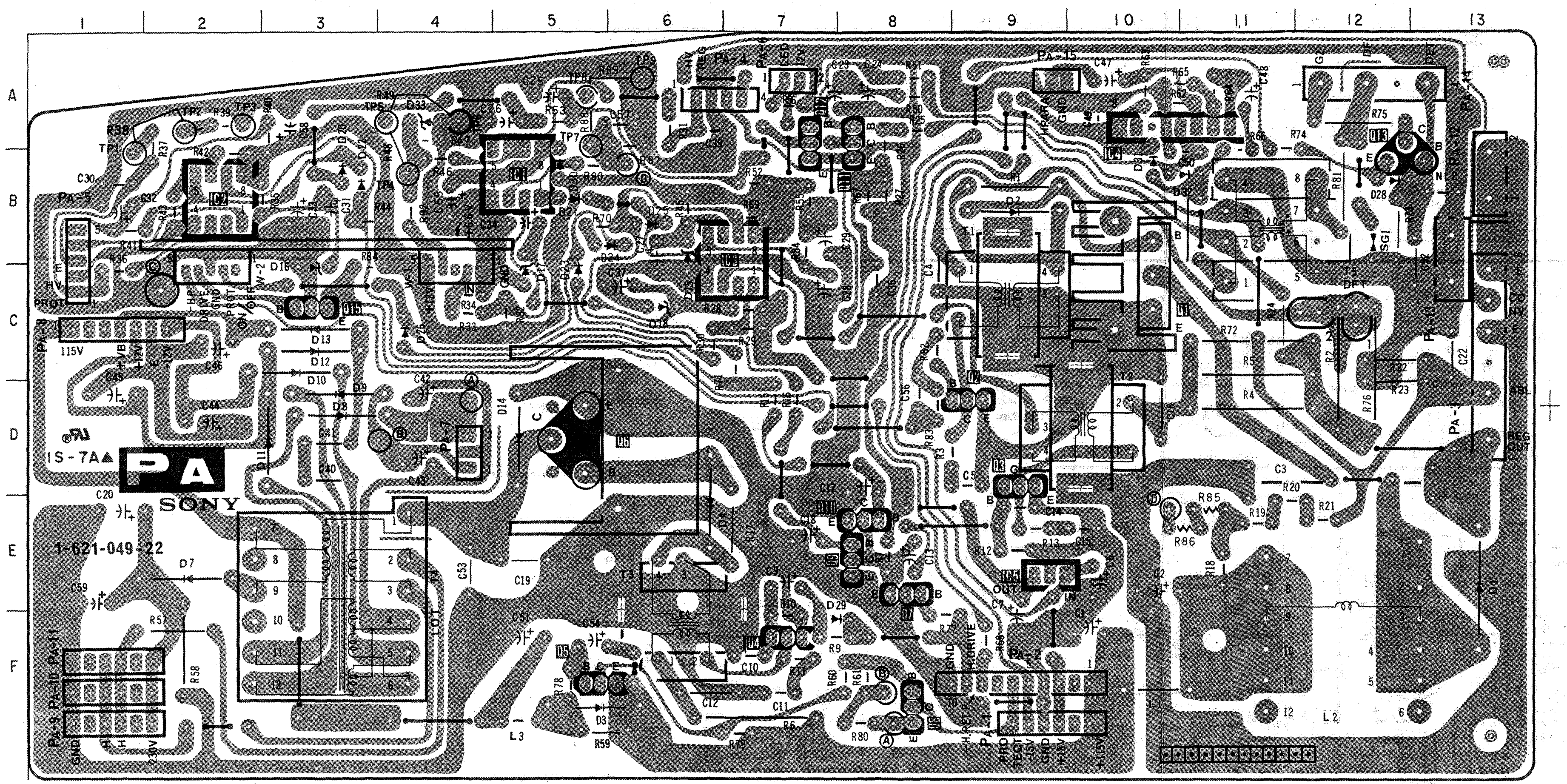

1-621-060-11
SONY
IC1
EC

– ED BOARD –


1-622-694-21
IS-7A
ED-1
R1
L1
L2
ED
SONY

PA [HV REG] **PB** [HV CONTROL] **PC** [FBT H CONV] **Y** [INDICATOR] **X** [LAMP]

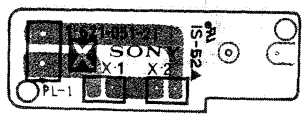
– PA BOARD –


1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
PA
SONY
1S-7A
1-621-049-22

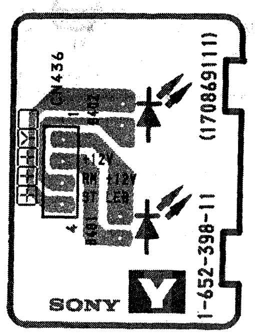
PA BOARD

IC			
IC1	B-5	D10	C-3
IC2	B-2	D11	D-3
IC3	B-6	D12	C-3
IC4	A-10	D13	C-3
IC5	E-9	D14	D-5
TRANSISTOR		D15	C-6
Q1	C-10	D16	C-3
Q2	D-9	D17	C-5
Q3	E-9	D18	C-6
Q4	F-7	D20	B-3
Q5	F-5	D21	B-5
Q6	D-5	D22	B-3
Q7	E-8	D23	C-5
Q8	F-8	D24	B-5
Q9	E-8	D25	B-6
Q10	E-8	D26	C-4
Q11	A-8	D28	B-12
Q12	A-7	D29	E-7
Q13	B-12	D30	B-5
Q14	C-3	D31	B-10
DIODE		D32	B-11
D1	E-13	D33	A-4
D2	B-9	**TEST POINT**	
D3	F-5	TP1	B-1
D4	E-6	TP2	A-2
D7	E-2	TP3	A-2
D8	D-3	TP4	B-4
D9	D-3	TP5	A-4
		TP6	A-4
		TP7	B-5
		TP8	A-5
		TP9	A-6

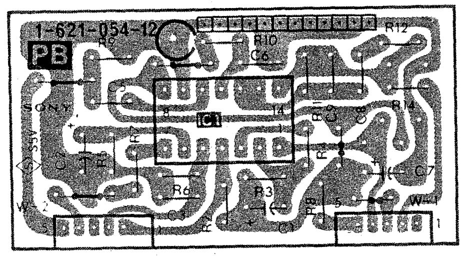
– X BOARD –


X
SONY
X1
X2
PL-1

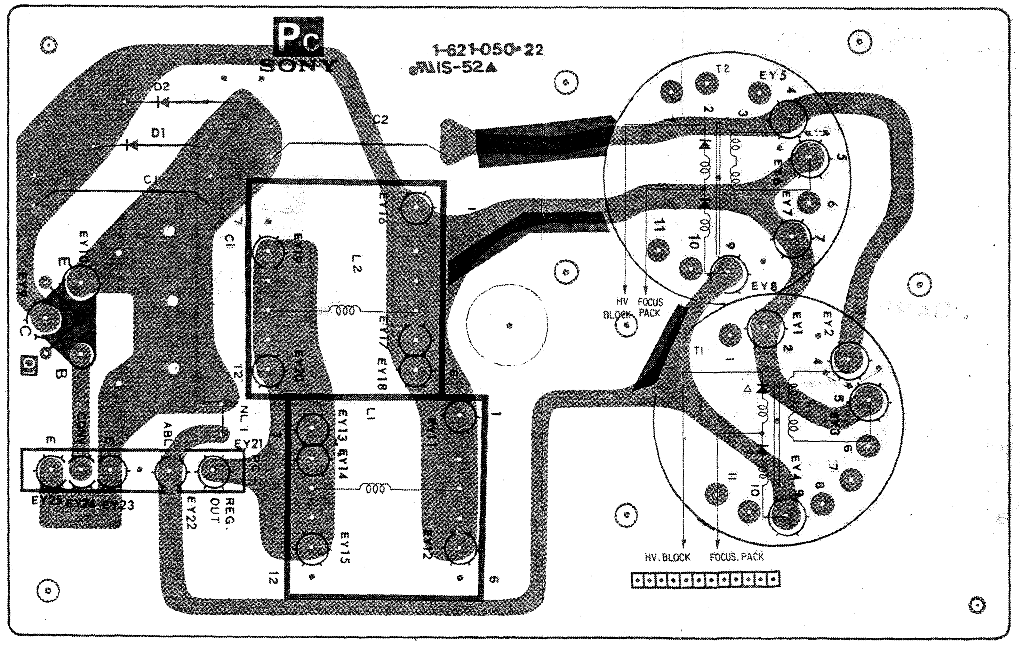
– Y BOARD –

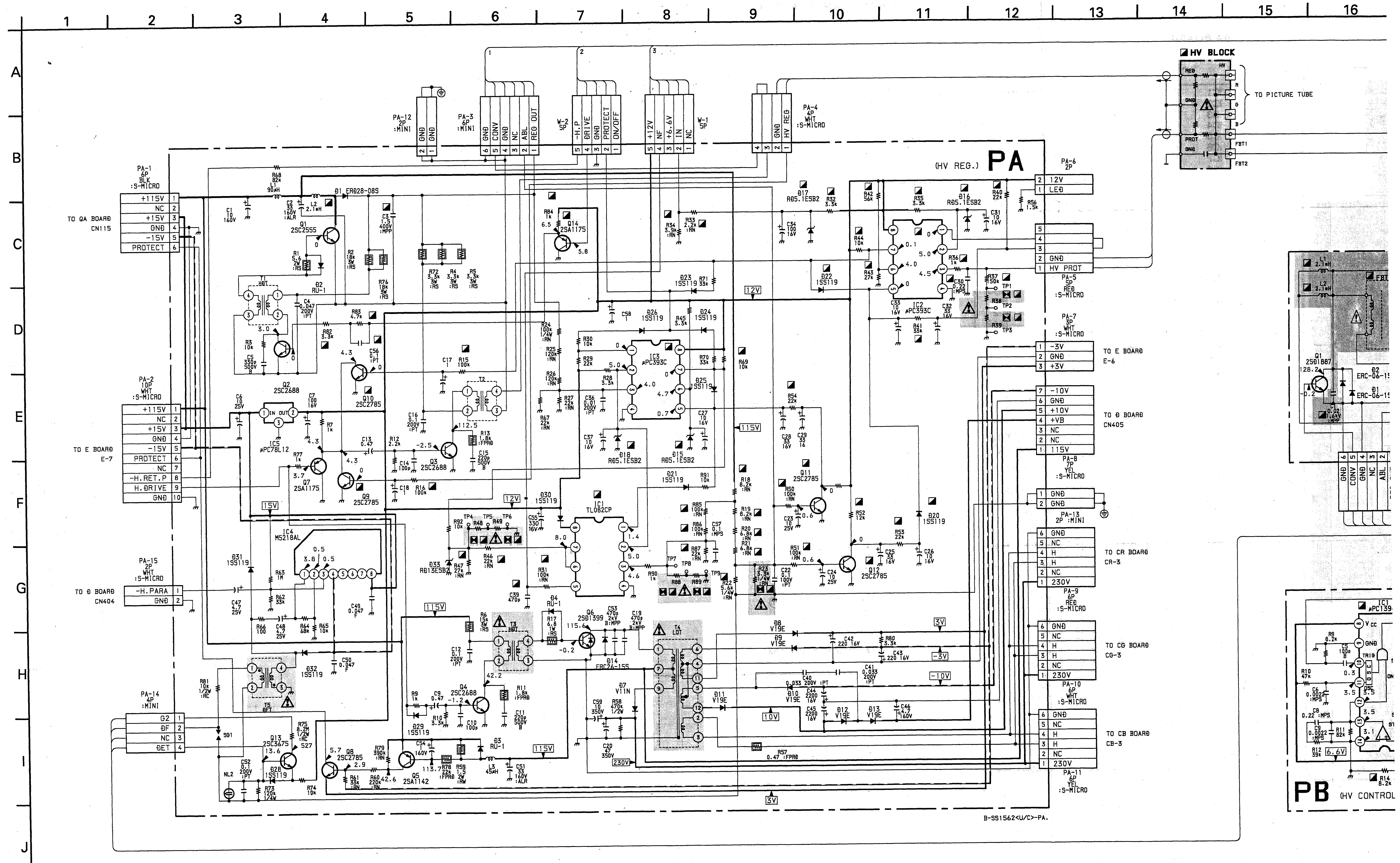

SONY
Y
1-652-398-11
(170869111)

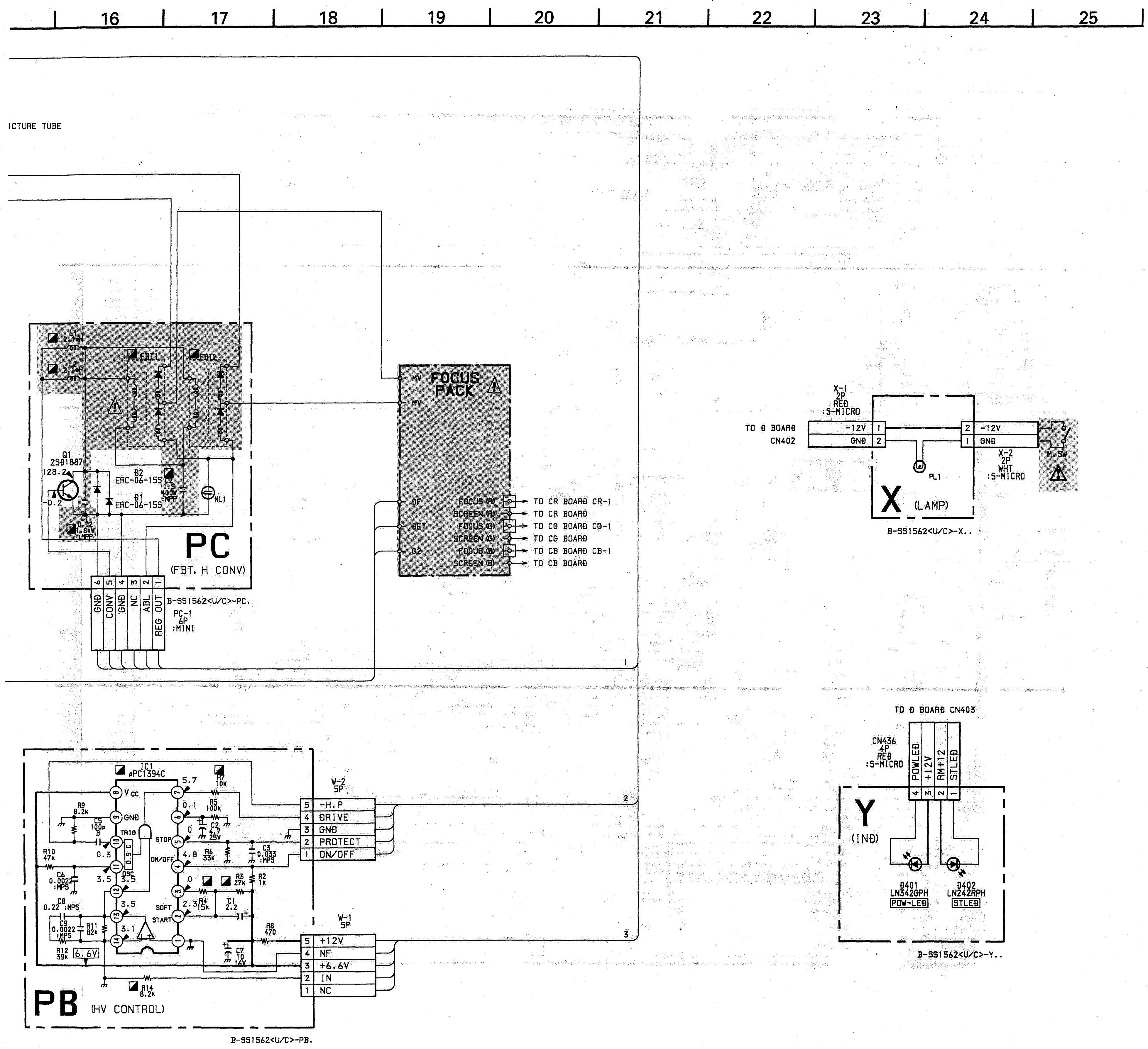
– PB BOARD –


1-621-054-12
PB
IC1

– PC BOARD –


PC
SONY
1-621-050-22
IS-52
HV BLOCK
FOCUS PACK
REG. OUT
ABL


PA
(HV REG.)
HV BLOCK
TO PICTURE TUBE
FBT1
FBT2
PA-1 6P BLK :S-MICRO
+115V
NC
+15V
GND
-15V
PROTECT
TO QA BOARD CN115
PA-2 10P WHT :S-MICRO
+115V
NC
+15V
GND
-15V
PROTECT
NC
-H.RET.P
H.DRIVE
GND
TO E BOARD E-7
PA-15 2P WHT :S-MICRO
-H.PARA
GND
TO D BOARD CN404
PA-14 4P :MINI
G2
DF
NC
DET
PA-12 2P :MINI
PA-3 6P :MINI
GND
CONV
GND
NC
ABL
REG OUT
W-2 5P
-H.P
DRIVE
GND
PROTECT
ON/OFF
W-1 5P
+12V
NF
+6.6V
IN
NC
PA-4 4P WHT :S-MICRO
GND
HV REG
PA-6 2P
12V
LED
GND
HV PROT
PA-5 5P RED :S-MICRO
PA-7 3P WHT :S-MICRO
-3V
GND
+3V
TO E BOARD E-6
-10V
GND
+10V
+VB
NC
NC
115V
TO D BOARD CN405
PA-8 7P YEL :S-MICRO
PA-13 2P :MINI
GND
NC
H
H
NC
230V
TO CR BOARD CR-3
PA-9 6P RED :S-MICRO
TO CG BOARD CG-3
PA-10 6P WHT :S-MICRO
TO CB BOARD CB-3
PA-11 6P YEL :S-MICRO
IC1 TL082CP
IC2 μPC393C
IC3 μPC393C
IC4 M5218AL
IC5 μPC78L12
T1 HDT
T2
T3 HBT
T4 LOT
T5 DFT
PB
(HV CONTROL
B-SS1562<U/C>-PA.


16
17
18
19
20
21
22
23
24
25
ICTURE TUBE
L1 2.1mH
L2 2.1mH
FBT1
FBT2
Q1 2SD1887
D2 ERC-06-15S
D1 ERC-06-15S
NL1
PC
(FBT, H CONV)
GND
CONV
GND
NC
ABL
REG OUT
B-SS1562<U/C>-PC.
PC-1 6P :MINI
FOCUS PACK
HV
HV
DF
DET
G2
FOCUS (R)
SCREEN (R)
FOCUS (G)
SCREEN (G)
FOCUS (B)
SCREEN (B)
TO CR BOARD CR-1
TO CR BOARD
TO CG BOARD CG-1
TO CG BOARD
TO CB BOARD CB-1
TO CB BOARD
X-1 2P RED :S-MICRO
TO D BOARD CN402
-12V
GND
X-2 2P WHT :S-MICRO
M.SW
PL1
X (LAMP)
B-SS1562<U/C>-X..
TO D BOARD CN403
CN436 4P RED :S-MICRO
POWLED
+12V
RM+12
STLED
Y
(IND)
D401 LN342GPH POW-LED
D402 LN242RPH STLED
B-SS1562<U/C>-Y..
IC1 μPC1394C
Vcc
GND
TRIG
OSC
STOP
ON/OFF
SOFT START
W-2 5P
-H.P
DRIVE
GND
PROTECT
ON/OFF
W-1 5P
+12V
NF
+6.6V
IN
NC
PB (HV CONTROL)
B-SS1562<U/C>-PB.

PA BOARD

Ref. No.	OPERATION
IC1	HV REG DET
IC2	HV DET
IC3	Σ IK DET
IC4	D FOCUS AMP
IC5	12V REG
Q1	HV REG
Q2	HV REG DRIVE
Q3	H DRIVE -1
Q4	H DRIVE -2
Q5	CURRENT PROT
Q6	CONV
Q7	H DRIVE BUFF
Q8	PROT SW
Q9	HV PROT SW -1
Q10	HV PROT SW -2
Q11	Σ IK PROT DET -1
Q12	Σ IK PROT DET -2
Q13	GZ CONT
Q14	REG BUFF
D1	HV REG CLAMP
D2	SPEED UP -1
D3	PROTECT -1
D4	SPEED UP -2
D7	+230V RECT
D8	+3V RECT
D9	−3V RECT
D10	−10V RECT
D11	+10V RECT
D12	V STOPPER
D13	V RECT
D14	DAMP -P
D15	Σ IK ZENER
D16	HV PROT ZENER
D17	HV REG ZENER
D18	REG OUT ZENER
D20	SW -1
D21	SW -5
D22	PROT HOLD
D23	SW -2
D24	SW -3
D25	Σ IK HOLD
D26	SW -4
D28	PROTECT -2
D29	SPEED UP -3
D30	+12V PROT
D31	D F PROT -1
D32	D F PROT -2
D33	NF ZENER

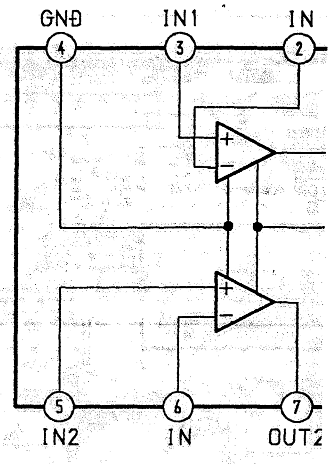
PB BOARD

Ref. No.	OPERATION
IC1	HV REG CONT

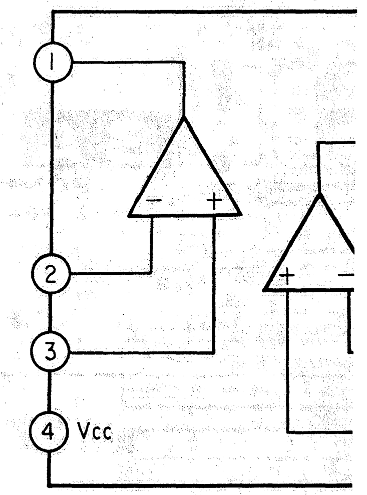
Y BOARD

Ref. No.	OPERATION
D401	POWER LED
D402	ST LED

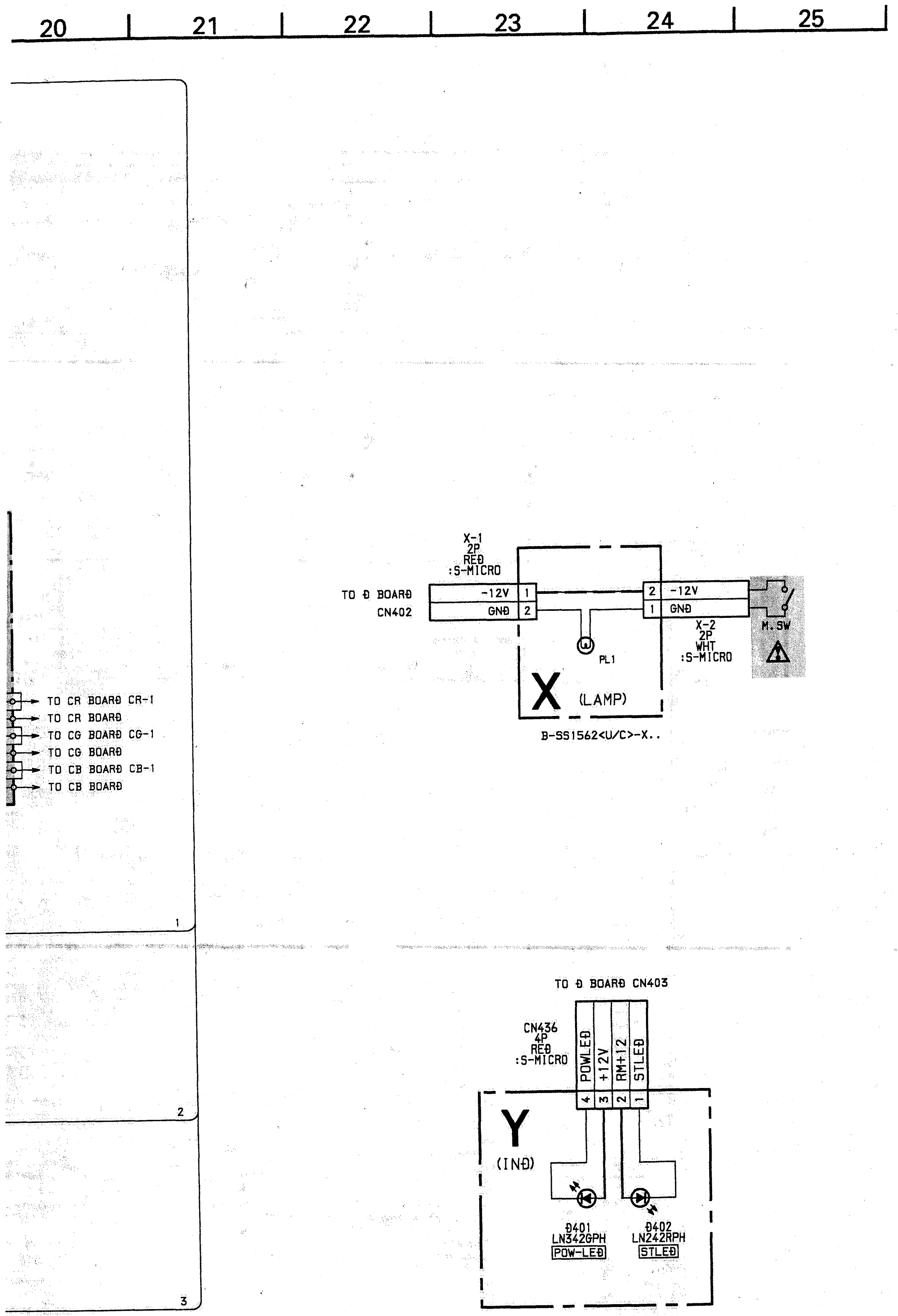
PA BOARD IC2, 3 μPC393


GND
IN1
IN
IN2
IN
OUT2

PA BOARD IC1 TL082CP



Schematic diagrams
← PA PB PC X


20
21
22
23
24
25
TO CR BOARD CR-1
TO CR BOARD
TO CG BOARD CG-1
TO CG BOARD
TO CB BOARD CB-1
TO CB BOARD
1
2
3
X-1
2P
RED
:S-MICRO
TO D BOARD
CN402
-12V
GND
1
2
-12V
GND
X-2
2P
WHT
:S-MICRO
M.SW
PL1
X
(LAMP)
B-SS1562<U/C>-X..
TO D BOARD CN403
CN436
4P
RED
:S-MICRO
POWLED
+12V
RM+12
STLED
4
3
2
1
Y
(IND)
D401
LN342GPH
POW-LED
D402
LN242RPH
STLED
B-SS1562<U/C>-Y..

PA BOARD

Ref. No.	OPERATION
IC1	HV REG DET
IC2	HV DET
IC3	Σ IK DET
IC4	D FOCUS AMP
IC5	12V REG
Q1	HV REG
Q2	HV REG DRIVE
Q3	H DRIVE -1
Q4	H DRIVE -2
Q5	CURRENT PROT
Q6	CONV
Q7	H DRIVE BUFF
Q8	PROT SW
Q9	HV PROT SW -1
Q10	HV PROT SW -2
Q11	Σ IK PROT DET -1
Q12	Σ IK PROT DET -2
Q13	GZ CONT
Q14	REG BUFF
D1	HV REG CLAMP
D2	SPEED UP -1
D3	PROTECT -1
D4	SPEED UP -2
D7	+230V RECT
D8	+3V RECT
D9	−3V RECT
D10	−10V RECT
D11	+10V RECT
D12	V STOPPER
D13	V RECT
D14	DAMP -P
D15	Σ IK ZENER
D16	HV PROT ZENER
D17	HV REG ZENER
D18	REG OUT ZENER
D20	SW -1
D21	SW -5
D22	PROT HOLD
D23	SW -2
D24	SW -3
D25	Σ IK HOLD
D26	SW -4
D28	PROTECT -2
D29	SPEED UP -3
D30	+12V PROT
D31	D F PROT -1
D32	D F PROT -2
D33	NF ZENER

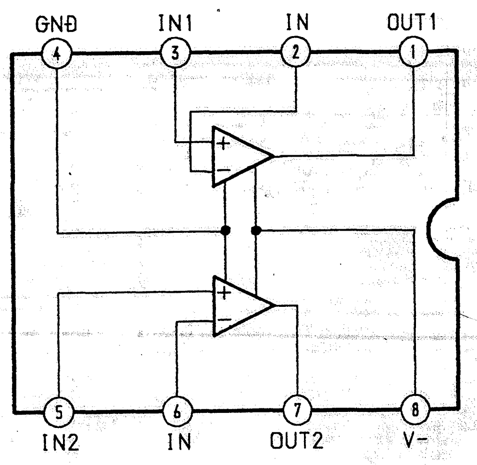
PB BOARD

Ref. No.	OPERATION
IC1	HV REG CONT

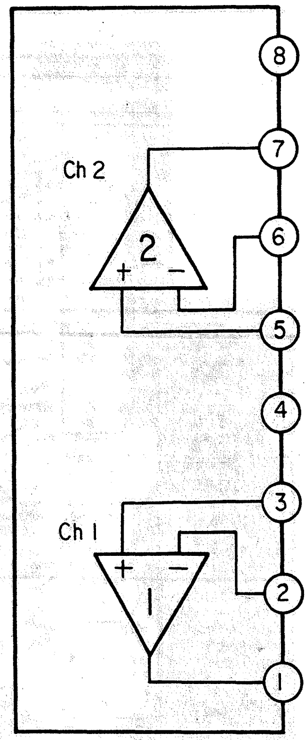
Y BOARD

Ref. No.	OPERATION
D401	POWER LED
D402	ST LED

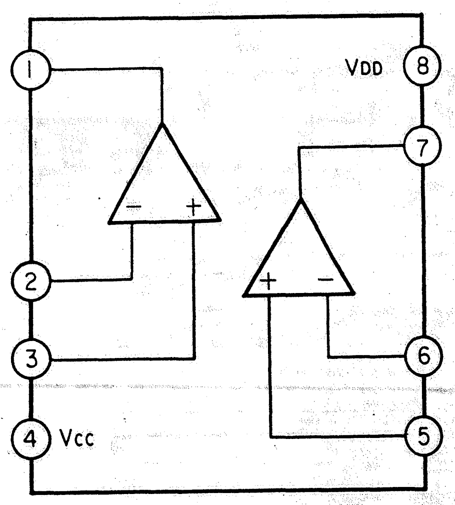
PA BOARD IC2, 3 μPC393C


GND
IN1
IN
OUT1
4
3
2
1
5
6
7
8
IN2
IN
OUT2
V−

PA BOARD IC4 M5218AL


8
7
6
5
4
3
2
1
Ch 2
2
Ch I
I

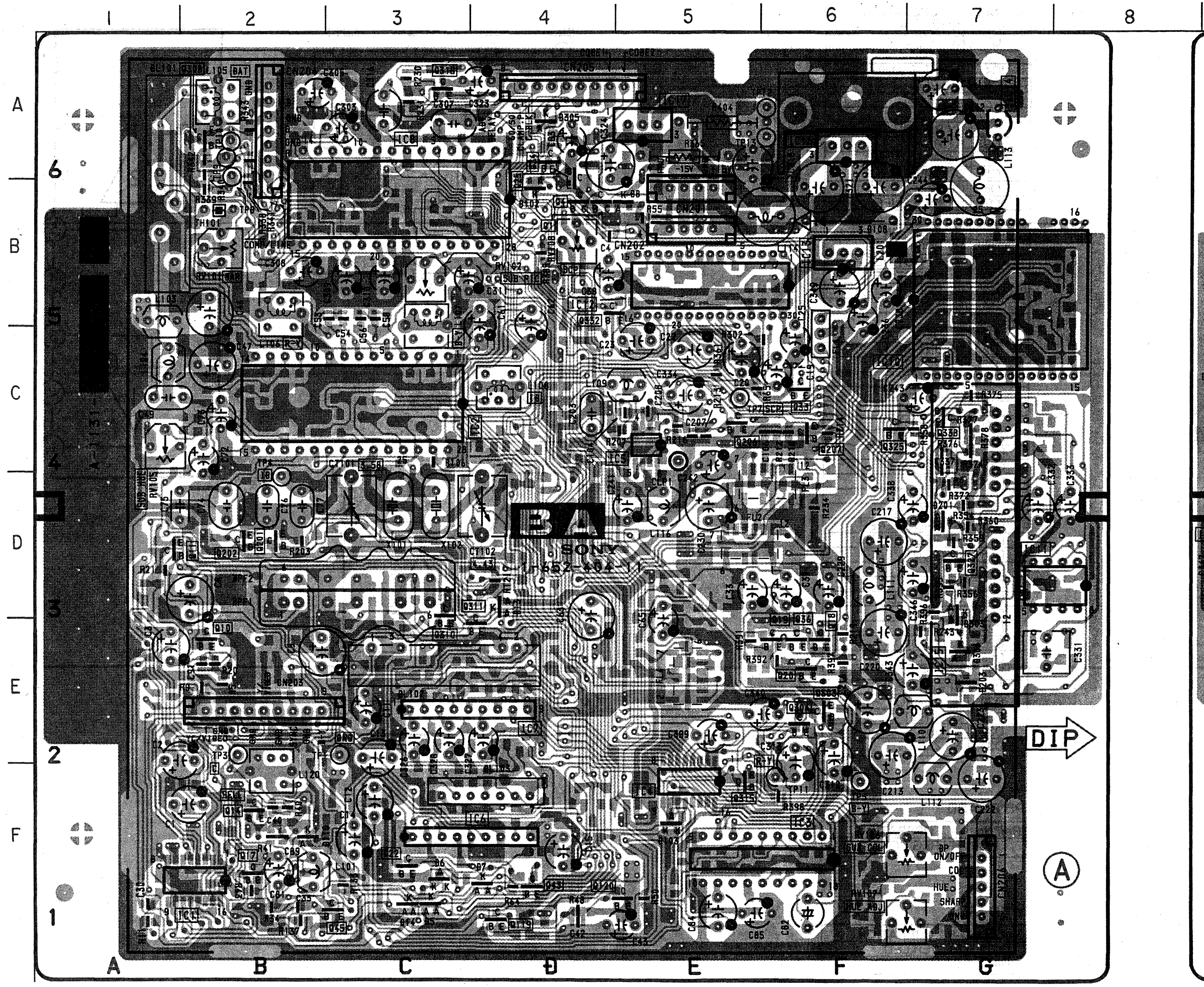
PA BOARD IC1 TL082CP


VDD
8
7
6
5
1
2
3
4
Vcc

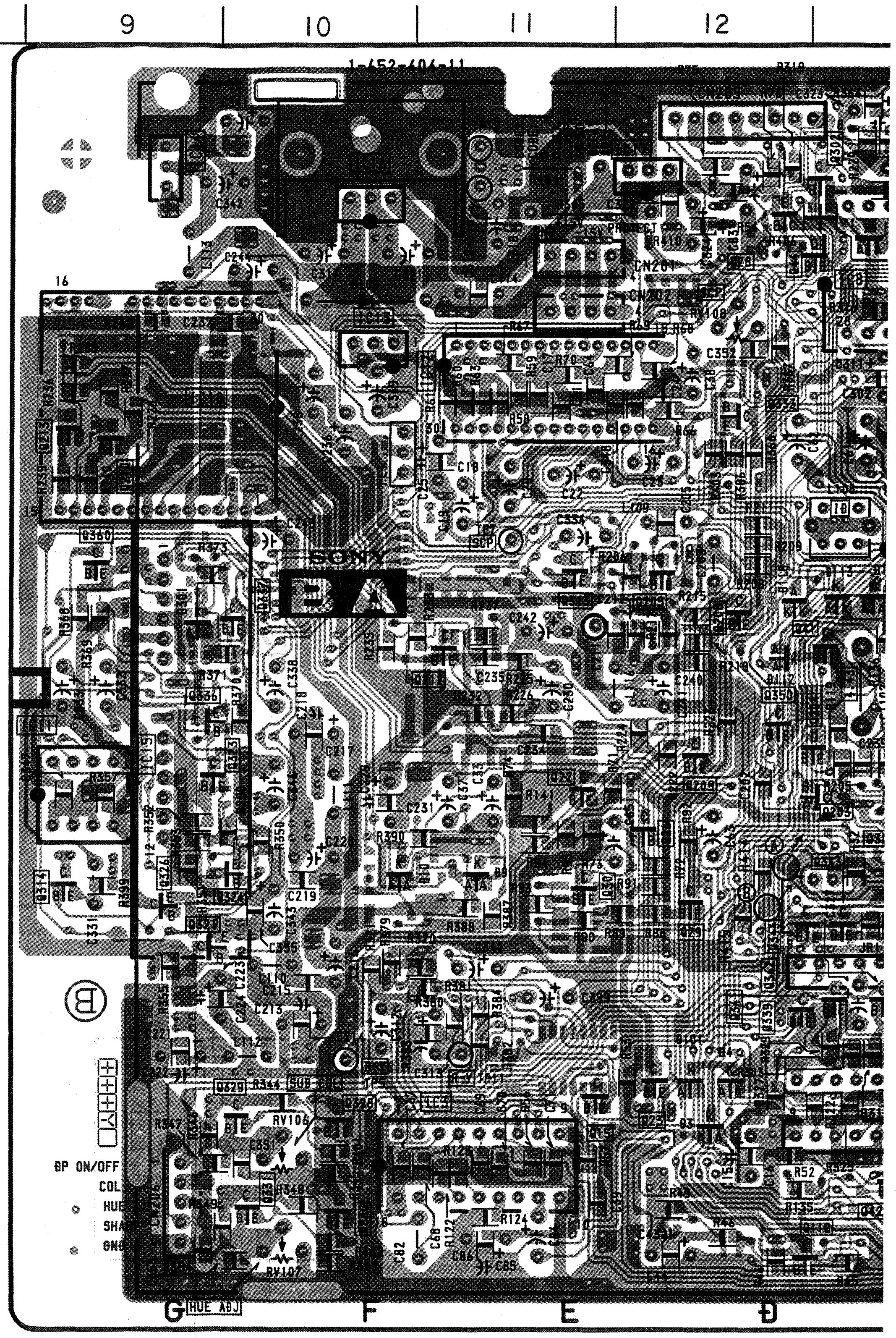
Schematic diagrams
← PA PB PC X Y boards

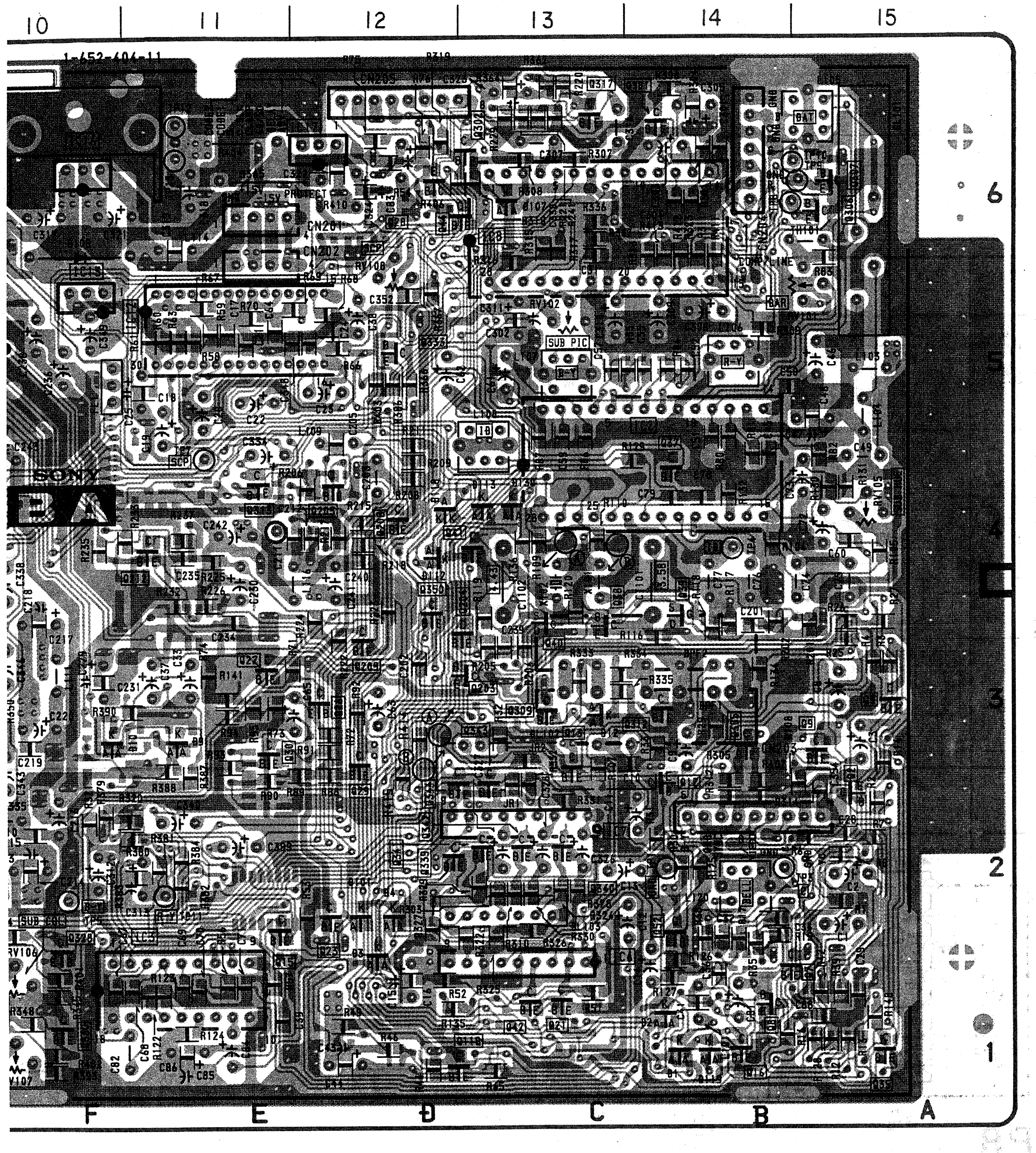
BA [PAL/SECAM/NTSC DECODER]

– BA BOARD – <Component Side>


1
2
3
4
5
6
7
8
A
B
C
D
E
F
6
5
4
3
2
1
A
B
C
D
E
F
G
BA
SONY
1-452-404-11
DIP
Ⓐ

<Conductor Side>


9
10
11
12
1-452-404-11
SONY
BA
Ⓑ
BP ON/OFF
COL
HUE
SHARP
GND
HUE ADJ
G
F
E
D


10
11
12
13
14
15
6
5
4
3
2
1
F
E
D
C
B
A
1-652-404-11
SONY
BA

BA BOARD

IC

IC1	F-2
IC2	C-3
IC3	F-6
IC4	F-5
IC5	F-5
IC6	F-4
IC7	E-4
IC8	B-3
IC10	B-7
IC11	D-7
IC12	B-5
IC13	B-6
IC14	A-7
IC15	D-7
IC16	A-6
IC17	A-5

TRANSISTOR

Q1	B-4
Q2	E-15
Q3	D-15
Q4	B-4
Q7	F-15
Q8	F-14
Q9	E-15
Q10	E-2
Q11	D-2
Q12	E-14
Q13	E-13
Q14	F-2
Q15	F-11
Q16	F-14
Q17	F-2
Q18	E-6
Q19	E-6
Q20	E-6
Q21	F-13
Q22	F-3
Q23	F-12
Q24	A-4
Q25	A-4
Q26	D-12
Q27	D-11
Q28	A-12
Q29	E-12
Q30	E-11
Q33	C-6
Q35	F-15
Q36	E-6
Q37	C-14
Q38	D-13
Q39	D-14
Q40	D-13
Q41	C-13
Q42	F-13
Q43	F-14
Q44	B-12
Q45	F-3
Q52	F-14
Q118	F-12
Q119	F-4
Q120	F-5
Q201	D-2
Q202	D-2
Q203	D-13
Q204	D-13
Q205	C-12
Q206	C-5
Q207	C-6
Q208	C-12
Q209	D-12
Q210	B-9
Q212	D-11
Q213	B-9
Q301	A-14
Q302	A-13
Q303	E-6
Q304	E-6
Q305	E-14
Q306	B-15
Q307	A-15
Q308	A-2
Q309	D-13
Q310	E-3
Q311	E-4
Q312	E-14
Q313	C-11
Q314	E-9
Q315	F-5
Q317	A-13
Q318	A-3
Q321	E-9
Q323	D-9
Q324	E-10
Q325	C-6
Q326	E-9
Q327	D-7
Q328	F-10
Q329	F-10
Q330	F-10
Q331	F-10
Q332	B-5
Q333	B-12
Q336	D-9
Q337	C-10
Q338	C-7
Q339	E-12
Q340	E-13
Q341	E-13
Q342	E-13
Q343	E-13
Q344	E-12
Q350	D-12
Q360	C-9

DIODE

D1	F-14
D2	F-14
D3	F-12
D4	F-12
D5	F-3
D6	F-3
D7	F-4
D8	B-5
D9	E-11
D10	E-10
D12	E-13
D13	D-4
D14	F-3
D101	F-12
D102	B-4
D103	F-5
D107	A-13
D108	B-6
D110	F-2
D112	D-12
D113	C-13
D118	C-12
D119	F-14
D130	C-13
D201	D-7
D301	C-9
D303	D-7
D304	E-7
D305	A-4

ADJUSTING ELEMENT

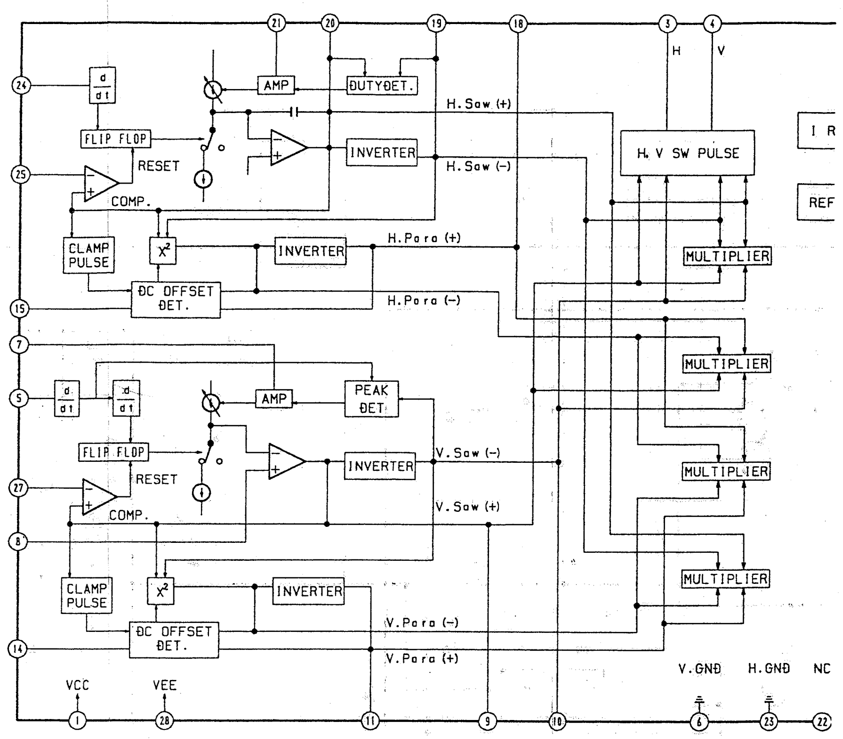
CT101	D-3
CT102	D-4
RV101	B-2
RV102	B-3
RV105	C-1
RV106	F-7
RV107	F-7
RV108	B-4

TEST POINT

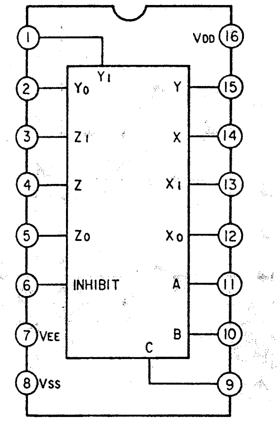
TP1	E-3
TP3	E-2
TP4	C-2
TP5	F-6
TP7	C-5
TP8	A-2
TP9	A-2
TP10	A-2
TP11	F-6
TP12	A-6
TP13	A-6

Note:
- ■ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear.

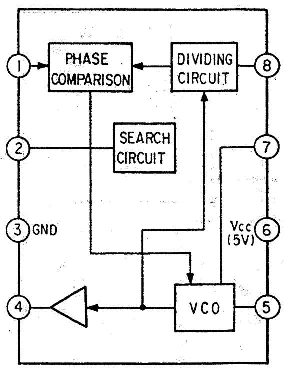
BA BOARD IC8 CXA-1216P


d/dt
AMP
DUTY DET.
FLIP FLOP
RESET
COMP.
INVERTER
H. Saw (+)
H. Saw (−)
H. V SW PULSE
CLAMP PULSE
x²
DC OFFSET DET.
H. Para (+)
H. Para (−)
MULTIPLIER
PEAK DET
V. Saw (−)
V. Saw (+)
V. Para (−)
V. Para (+)
VCC
VEE
V.GND
H.GND
NC
H
V
REF
21
20
19
18
3
4
24
25
15
7
5
27
8
14
1
28
11
9
10
6
23
22

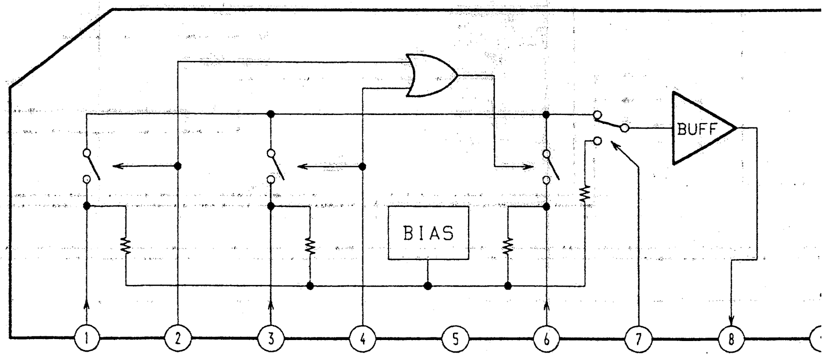
BA BOARD IC1, 4 HD14053BFP


VDD
Y1
Y0
Y
Z1
X
Z
X1
Z0
X0
INHIBIT
A
VEE
B
VSS
C
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

BA BOARD IC5 NJM2228


PHASE COMPARISON
DIVIDING CIRCUIT
SEARCH CIRCUIT
GND
Vcc (5V)
VCO
1
2
3
4
5
6
7
8

BA BOARD IC6, 7 CX-894


BUFF
BIAS
1
2
3
4
5
6
7
8

BA BOARD

IC	
IC1	F-2
IC2	C-3
IC3	F-6
IC4	F-5
IC5	F-5
IC6	F-4
IC7	E-4
IC8	B-3
IC10	B-7
IC11	D-7
IC12	B-5
IC13	B-6
IC14	A-7
IC15	D-7
IC16	A-6
IC17	A-5

TRANSISTOR	
Q1	B-4
Q2	E-15
Q3	D-15
Q4	B-4
Q7	F-15
Q8	F-14
Q9	E-15
Q10	E-2
Q11	D-2
Q12	E-14
Q13	E-13
Q14	F-2
Q15	F-11
Q16	F-14
Q17	F-2
Q18	E-6
Q19	E-6
Q20	E-6
Q21	F-13
Q22	F-3
Q23	F-12
Q24	A-4
Q25	A-4
Q26	D-12
Q27	D-11
Q28	A-12
Q29	E-12
Q30	E-11
Q33	C-6
Q35	F-15
Q36	E-6
Q37	C-14
Q38	D-13
Q39	D-14
Q40	D-13
Q41	C-13
Q42	F-13
Q43	F-14
Q44	B-12
Q45	F-3
Q52	F-14
Q118	F-12
Q119	F-4
Q120	F-5
Q201	D-2
Q202	D-2
Q203	D-13
Q204	D-13
Q205	C-12
Q206	C-5
Q207	C-6
Q208	C-12
Q209	D-12
Q210	B-9
Q212	D-11
Q213	B-9
Q301	A-14
Q302	A-13
Q303	E-6
Q304	E-6
Q305	E-14
Q306	B-15
Q307	A-15
Q308	A-2
Q309	D-13
Q310	E-3
Q311	E-4
Q312	E-14
Q313	C-11
Q314	E-9
Q315	F-5
Q317	A-13
Q318	A-3
Q321	E-9
Q323	D-9
Q324	E-10
Q325	C-6
Q326	E-9
Q327	D-7
Q328	F-10
Q329	F-10
Q330	F-10
Q331	F-10
Q332	B-5
Q333	B-12
Q336	D-9
Q337	C-10
Q338	C-7
Q339	E-12
Q340	E-13
Q341	E-13
Q342	E-13
Q343	E-13
Q344	E-12
Q350	D-12
Q360	C-9

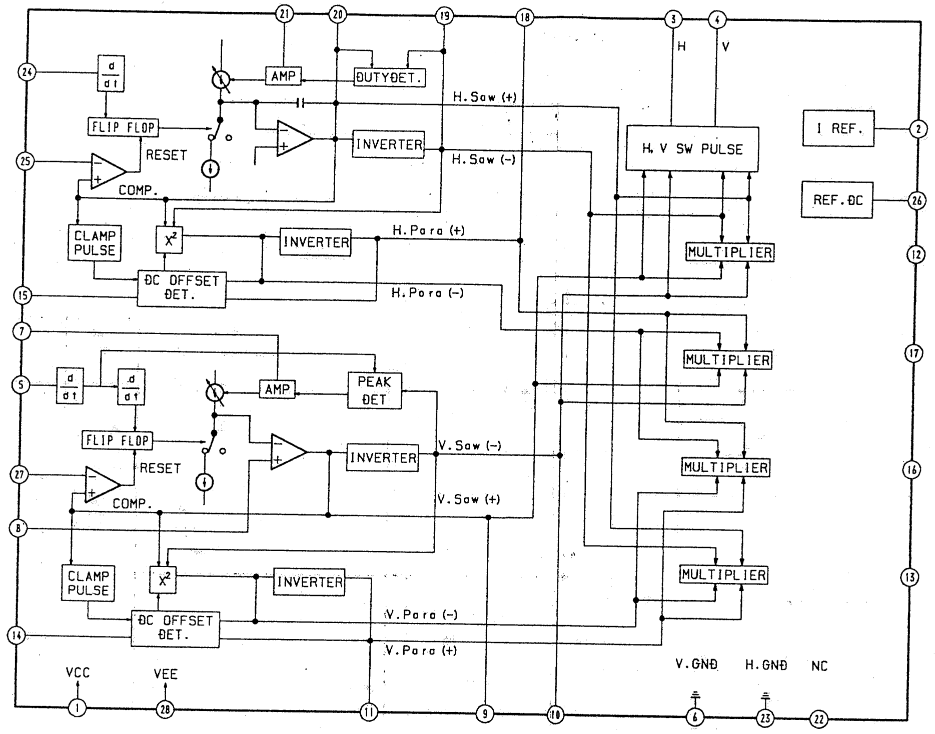
DIODE	
D1	F-14
D2	F-14
D3	F-12
D4	F-12
D5	F-3
D6	F-3
D7	F-4
D8	B-5
D9	E-11
D10	E-10
D12	E-13
D13	D-4
D14	F-3
D101	F-12
D102	B-4
D103	F-5
D107	A-13
D108	B-6
D110	F-2
D112	D-12
D113	C-13
D118	C-12
D119	F-14
D130	C-13
D201	D-7
D301	C-9
D303	D-7
D304	E-7
D305	A-4

ADJUSTING ELEMENT	
CT101	D-3
CT102	D-4
RV101	B-2
RV102	B-3
RV105	C-1
RV106	F-7
RV107	F-7
RV108	B-4

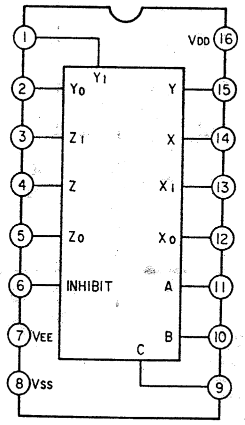
TEST POINT	
TP1	E-3
TP3	E-2
TP4	C-2
TP5	F-6
TP7	C-5
TP8	A-2
TP9	A-2
TP10	A-2
TP11	F-6
TP12	A-6
TP13	A-6

Note:
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear.

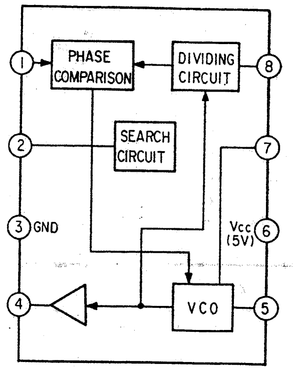
BA BOARD IC8 CXA-1216P


d/dt
FLIP FLOP
RESET
COMP.
AMP
DUTY DET.
INVERTER
H. Saw (+)
H. Saw (−)
CLAMP PULSE
X²
DC OFFSET DET.
H. Para (+)
H. Para (−)
PEAK DET
V. Saw (−)
V. Saw (+)
V. Para (−)
V. Para (+)
H
V
H, V SW PULSE
MULTIPLIER
I REF.
REF. DC
VCC
VEE
V. GND
H. GND
NC

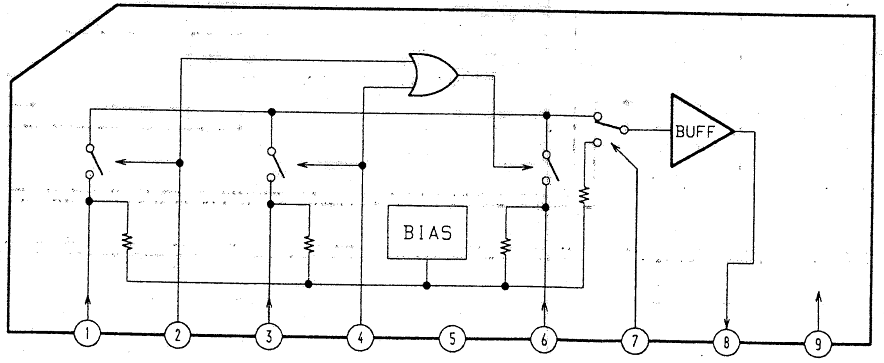
BA BOARD IC1, 4 HD14053BFP


VDD
Y1
Y0
Y
Z1
X
Z
X1
Z0
X0
INHIBIT
A
VEE
B
C
VSS

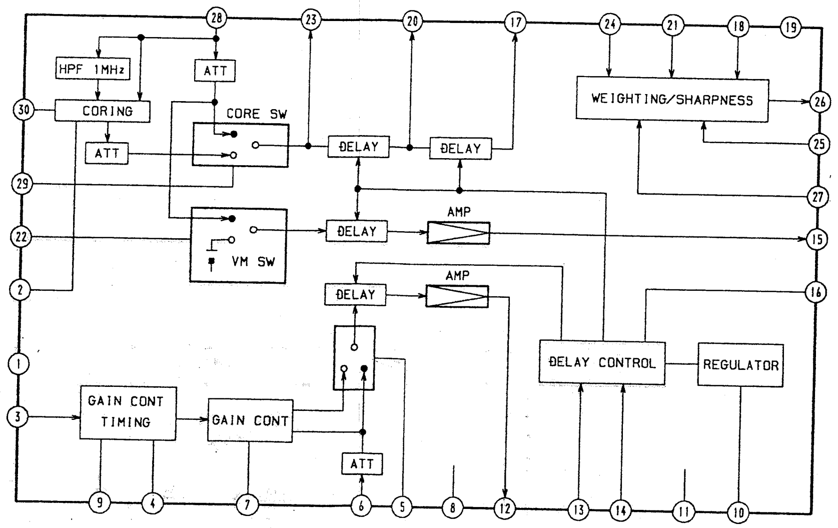
BA BOARD IC5 NJM2228M


PHASE COMPARISON
DIVIDING CIRCUIT
SEARCH CIRCUIT
GND
Vcc (5V)
VCO

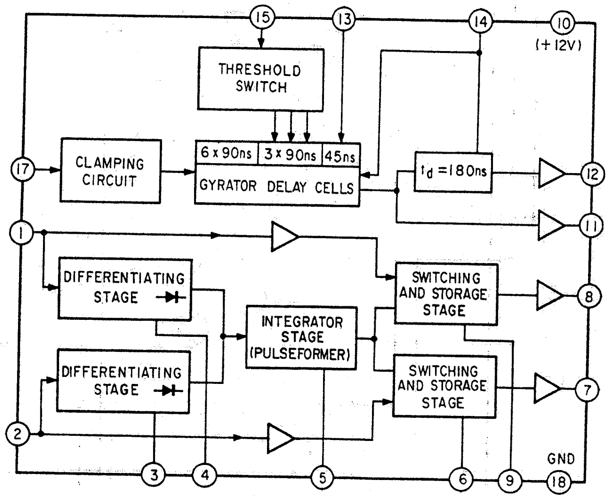
BA BOARD IC6, 7 CX-894



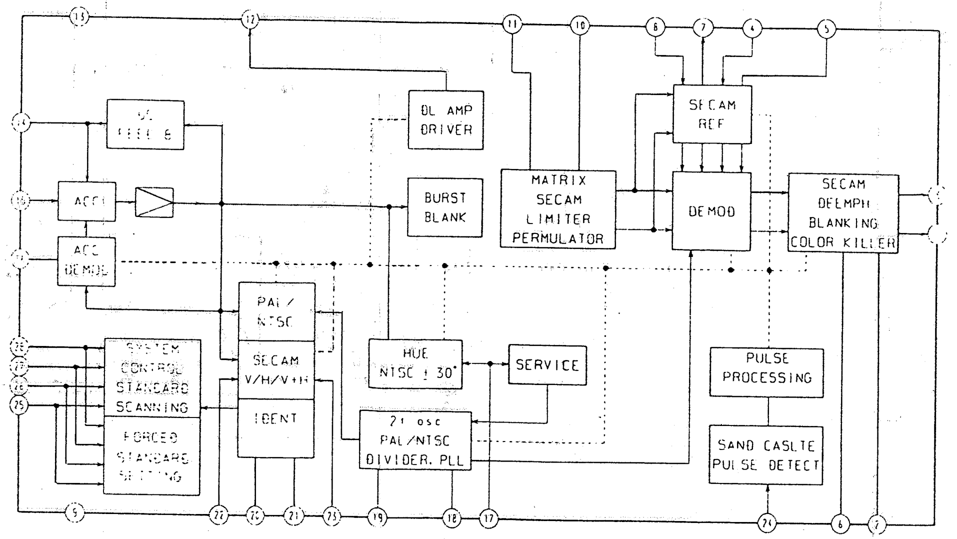
BA BOARD IC12 CXA1387S

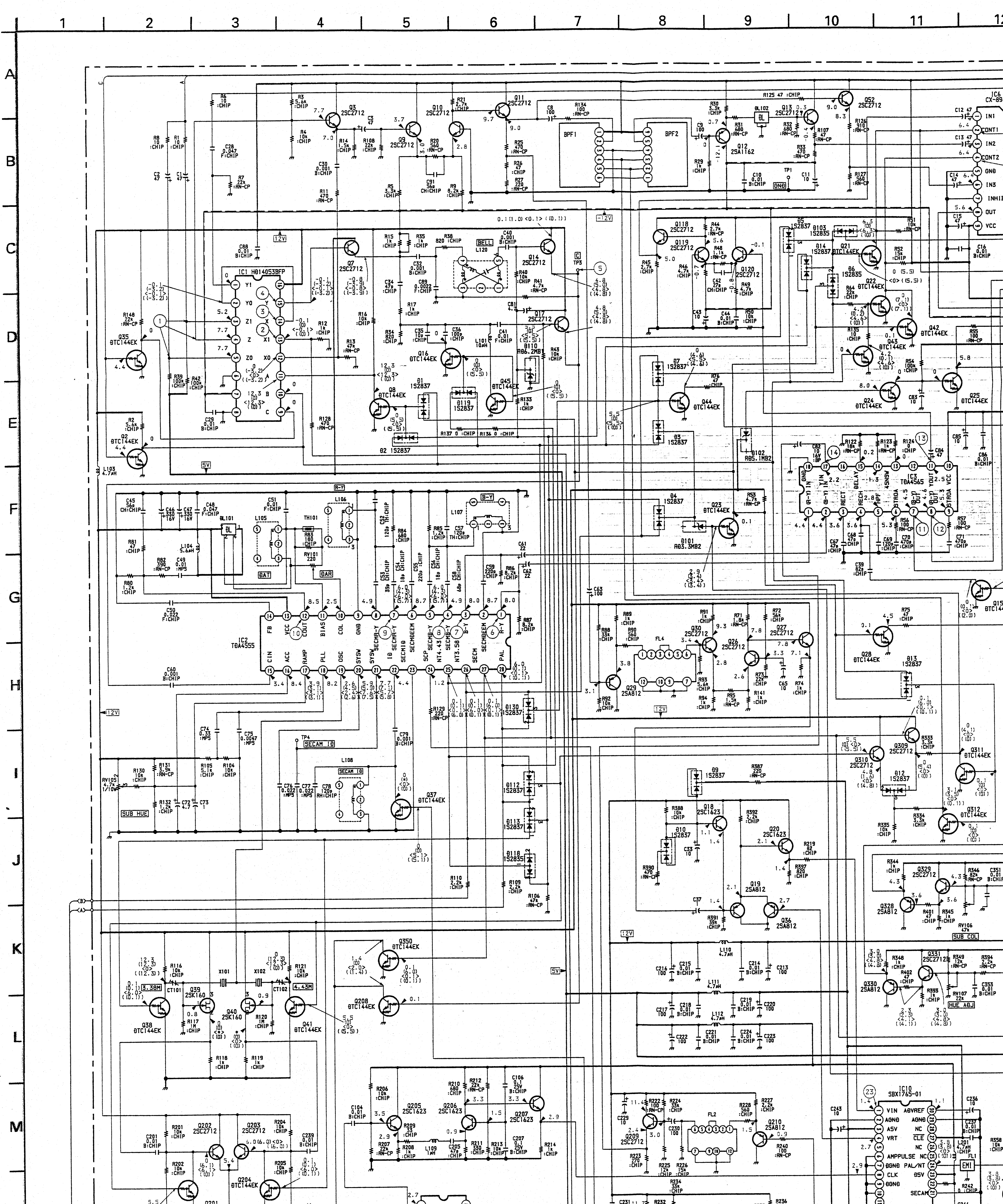

HPF 1MHz
CORING
ATT
CORE SW
VM SW
DELAY
AMP
WEIGHTING/SHARPNESS
GAIN CONT TIMING
GAIN CONT
DELAY CONTROL
REGULATOR

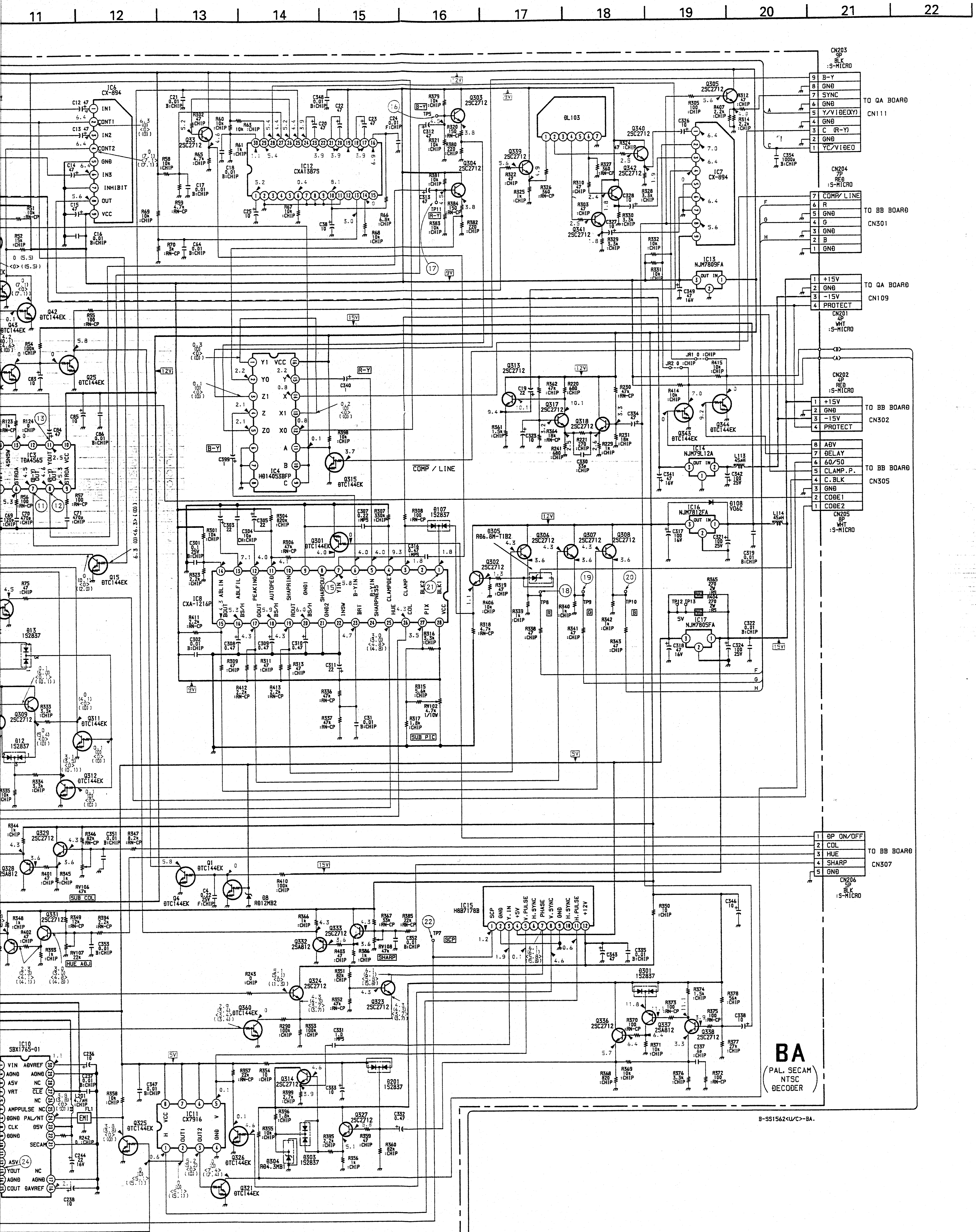
BA BOARD IC3 TDA4565


(+12V)
THRESHOLD SWITCH
CLAMPING CIRCUIT
6×90ns
3×90ns
45ns
GYRATOR DELAY CELLS
td=180ns
DIFFERENTIATING STAGE
INTEGRATOR STAGE (PULSEFORMER)
SWITCHING AND STORAGE STAGE
GND

BA BOARD IC2 TDA4555


DL AMP DRIVER
ACC
ACC DEMOD
BURST BLANK
MATRIX SECAM LIMITER PERMULATOR
SECAM REF
DEMOD
SECAM DEEMPH BLANKING COLOR KILLER
PAL / NTSC
SECAM V/H/V+H
IDENT
SYSTEM CONTROL STANDARD SCANNING
FORCED STANDARD SETTING
HUE NTSC ± 30°
SERVICE
2f osc PAL/NTSC DIVIDER. PLL
PULSE PROCESSING
SAND CASLTE PULSE DETECT


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
IC1 HD14053BFP
IC2 TDA4555
IC3 TDA4565
IC5 NJM2228M
IC10 SBX1765-01
IC6 CX-89
BPF1
BPF2
FL1
FL2
FL3
FL4
EMI
BL101
TH101
L105
L106
L107
L108
X101
X102
3.58M
4.43M
SECAM ID
SUB HUE
SUB COL
HUE ADJ
BELL
BAT
DAR
R-Y
B-Y
12V
5V
-12V
GND
TP1
TP3
TP4
Q3 2SC2712
Q9 2SC2712
Q10 2SC2712
Q11 2SC2712
Q12 2SA1162
Q13 2SC2712
Q52 2SC2712
Q7 2SC2712
Q14 2SC2712
Q17 2SC2712
Q16 DTC144EK
Q45 DTC144EK
Q8 DTC144EK
Q35 DTC144EK
Q2 DTC144EK
Q44 DTC144EK
Q23 DTC144EK
Q118 2SC2712
Q119 2SC2712
Q120 2SC2712
Q21 DTC144EK
Q22 DTC144EK
Q42 DTC144EK
Q43 DTC144EK
Q24 DTC144EK
Q25 DTC144EK
Q26 2SC2712
Q27 2SC2712
Q29 2SA812
Q30 2SC2712
Q28 DTC144EK
Q309 2SC2712
Q310 2SC2712
Q311 DTC144EK
Q312 DTC144EK
Q18 2SC1623
Q20 2SC1623
Q19 2SA812
Q36 2SA812
Q37 DTC144EK
Q38 DTC144EK
Q39 2SK160
Q40 2SK160
Q41 DTC144EK
Q350 DTC144EK
Q208 DTC144EK
Q329 2SC2712
Q328 2SA812
Q331 2SC2712
Q330 2SA812
Q201 DTC144EK
Q202 2SC2712
Q203 2SC2712
Q204 DTC144EK
Q205 2SC1623
Q206 2SC1623
Q207 2SC1623
Q209 2SC2712
Q210 2SA812
Q212 2SC2712
Q213 2SA812
D1 1S2837
D2 1S2837
D3 1S2837
D4 1S2837
D5 1S2837
D7 1S2837
D9 1S2837
D10 1S2837
D12 1S2837
D13 1S2837
D101 RD3.3MB2
D102 RD5.1MB2
D103 1S2835
D110 RD6.2MB1
D112 1S2837
D113 1S2837
D118 1S2835
D119 1S2837
D130 1S2837
VIN
AGND
ASV
VRT
AMPPULSE
BGND
CLK
DGND
ASV
YOUT
COUT
ABVREF
NC
CLE
PAL/NT
8SV
SECAM
DAVREF
IN1
CONT1
IN2
CONT2
GND
IN3
INHI
OUT
VCC
FB
VCC
COUT
BIAS
COL
GND
SECAM-Y
ID
SECAMID
SECMB-Y
NT4.43
NT3.58
SECM
PAL
CIN
ACC
RAMP
PLL
OSC
SYSW
SCP
(B)
(A)

11
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21
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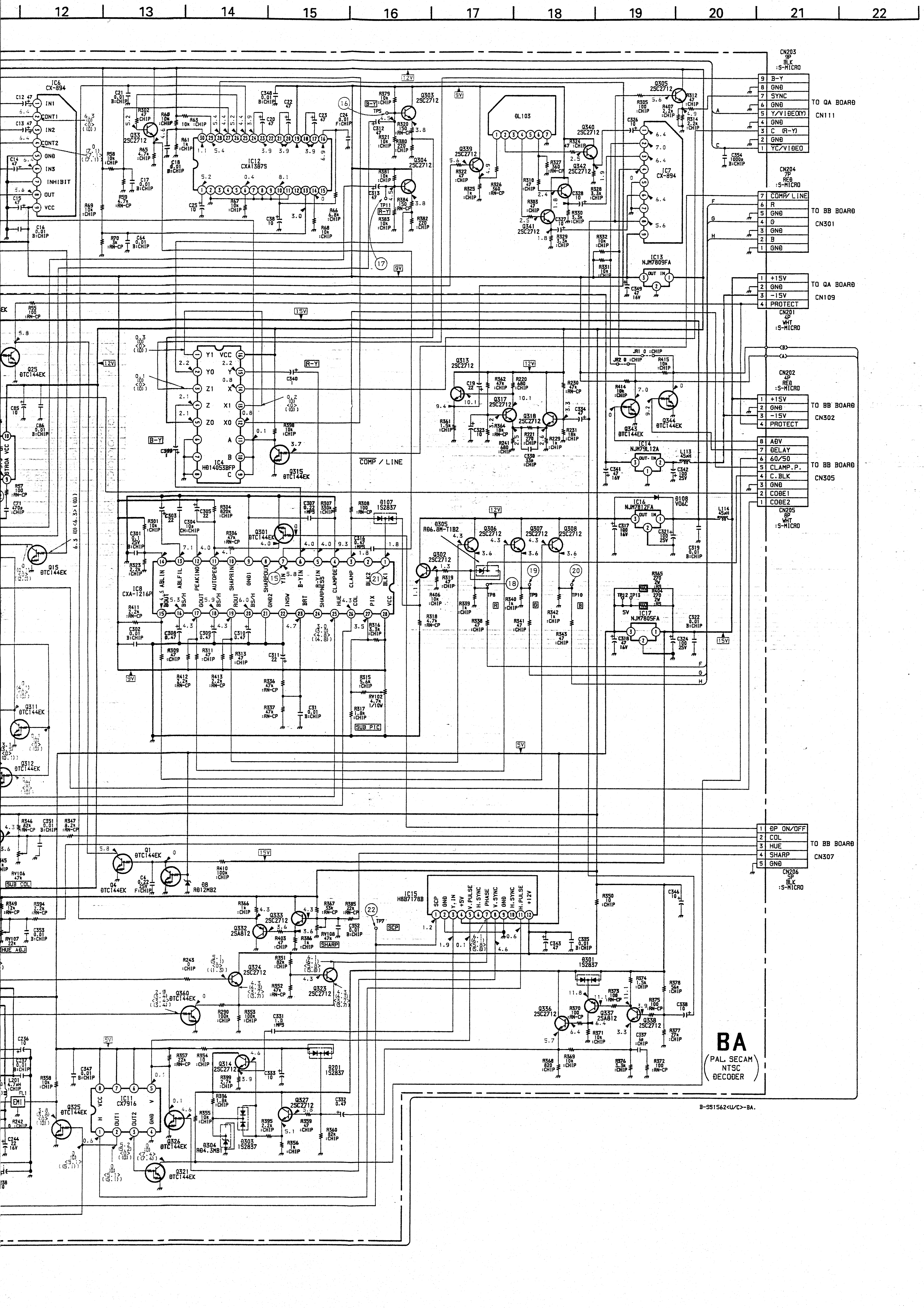
IC6 CX-894
IN1
CONT1
IN2
CONT2
GND
IN3
INHIBIT
OUT
VCC
IC12 CXA1387S
DL103
IC7 CX-894
CN203 9P BLK :S-MICRO
9 B-Y
8 GND
7 SYNC
6 GND
5 Y/VIDEO(Y)
4 GND
3 C (R-Y)
2 GND
1 YC/VIDEO
TO QA BOARD CN111
CN204 7P RED :S-MICRO
7 COMP/LINE
6 R
5 GND
4 G
3 GND
2 B
1 GND
TO BB BOARD CN301
IC13 NJM7809FA
1 +15V
2 GND
3 -15V
4 PROTECT
TO QA BOARD CN109
CN201 4P WHT :S-MICRO
CN202 4P RED :S-MICRO
1 +15V
2 GND
3 -15V
4 PROTECT
TO BB BOARD CN302
IC14 NJM79L12A
8 ADV
7 DELAY
6 60/50
5 CLAMP.P.
4 C.BLK
3 GND
2 CODE1
1 CODE2
TO BB BOARD CN305
CN205 8P WHT :S-MICRO
IC16 NJM7812FA
IC17 NJM7805FA
IC4 HD14053BFP
IC3 TDA4565
IC8 CXA-1216P
ABLIN
ABLFIL
PEAKING
AUTOPED
SHARPIN
GND1
SHARPOUT
YIN
B-YIN
R-YIN
CLAMPDET
CLAMP
BLK2
BLK1
BOUT
BS/H
GOUT
GS/H
ROUT
RS/H
GND2
INSW
BRT
SHARPNESS
HUE
COL
PIX
VCC
COMP / LINE
SUB PIC
SUB COL
HUE ADJ
SHARP
IC15 HD7178B
SCP
GND
Y.IN
+5V
V.PULSE
H.SYNC
PHASE
V.SYNC
GND
H.SYNC
H.PULSE
+12V
TP7 SCP
1 DP ON/OFF
2 COL
3 HUE
4 SHARP
5 GND
TO BB BOARD CN307
CN206 5P BLK :S-MICRO
IC10 SBX1765-01
VIN ADVREF
AGND AGND
ASV NC
VRT CLE
NC NC
AMPPULSE NC
DGND PAL/NT
CLK DSV
DGND SECAM
ASV
YOUT NC
AGND AGND
COUT DAVREF
IC11 CX7916
BA
(PAL, SECAM NTSC DECODER)
B-SS1562<U/C>-BA.

12
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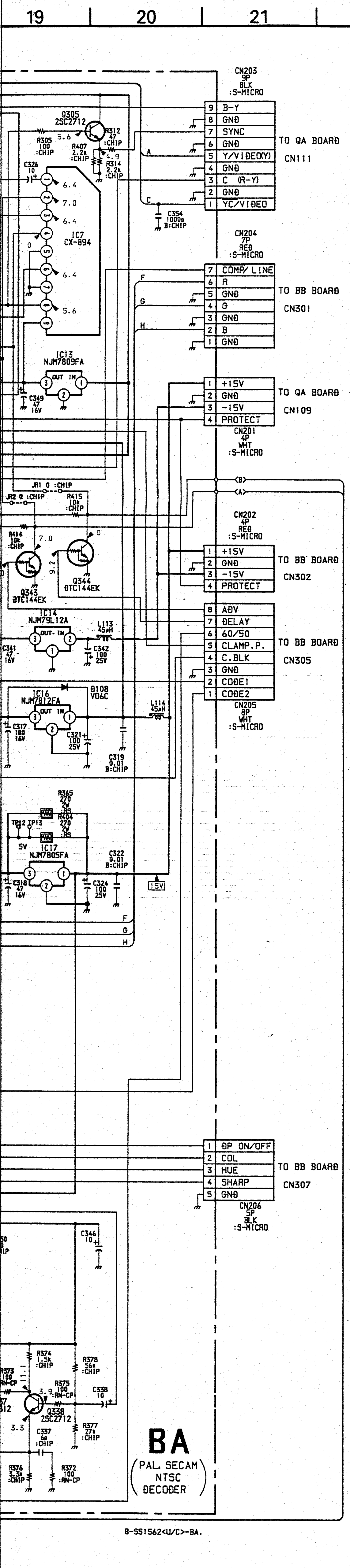
22
IC6 CX-894
IN1
CONT1
IN2
CONT2
GND
IN3
INHIBIT
OUT
VCC
IC12 CXA1387S
Q33 2SC2712
Q303 2SC2712
Q304 2SC2712
TP5
TP11
B-Y
R-Y
12V
5V
9V
15V
DL103
Q339 2SC2712
Q340 2SC2712
Q342 2SC2712
Q341 2SC2712
Q305 2SC2712
Q312
IC7 CX-894
IC13 NJM7809FA
CN203 9P BLK :S-MICRO
9 B-Y
8 GND
7 SYNC
6 GND
5 Y/VIDEO(Y)
4 GND
3 C (R-Y)
2 GND
1 YC/VIDEO
TO QA BOARD CN111
CN204 7P RED :S-MICRO
7 COMP/ LINE
6 R
5 GND
4 G
3 GND
2 B
1 GND
TO BB BOARD CN301
1 +15V
2 GND
3 -15V
4 PROTECT
TO QA BOARD CN109
CN201 4P WHT :S-MICRO
CN202 4P RED :S-MICRO
1 +15V
2 GND
3 -15V
4 PROTECT
TO BB BOARD CN302
8 ADV
7 DELAY
6 60/50
5 CLAMP.P.
4 C.BLK
3 GND
2 CODE1
1 CODE2
TO BB BOARD CN305
CN205 8P WHT :S-MICRO
Q25 DTC144EK
IC4 HD14053BFP
Y1 VCC Y0 Y Z1 X Z X1 Z0 X0 A B C
Q315 DTC144EK
COMP / LINE
Q313 2SC2712
Q317 2SC2712
Q318 2SC2712
Q343 DTC144EK
Q344 DTC144EK
IC14 NJM79L12A
L113 45μH
IC16 NJM7812FA
D108 V06C
L114 45μH
IC17 NJM7805FA
IC8 CXA-1216P
ABLIN ABLFIL PEAKING AUTOPED SHARPIN GND1 SHARPOUT YIN B-YIN R-YIN CLAMPDET CLAMP BLK2 BLK1
BOUT BS/H GOUT BS/H ROUT BS/H GND2 INSW BRT SHARPNESS HUE COL PIX VCC
Q301 DTC144EK
D107 1S2837
RV102 SUB PIC
Q305 RD6.8M-T1B2
Q302 2SC2712
Q306 2SC2712
Q307 2SC2712
Q308 2SC2712
TP8 R
TP9 G
TP10 B
Q15 DTC144EK
Q311 DTC144EK
Q312 DTC144EK
SUB COL
RV106
HUE ADJ
RV107
Q1 DTC144EK
Q4 DTC144EK
D8 RB12MB2
Q333 2SC2712
Q332 2SA812
RV108 SHARP
TP7 SCP
IC15 HD87178B
SCP GND V.IN +5V V.PULSE H.SYNC PHASE V.SYNC GND H.SYNC H.PULSE +12V
Q324 2SC2712
Q323 2SC2712
Q360 DTC144EK
D301 1S2837
Q336 2SC2712
Q337 2SA812
Q338 2SC2712
TO BB BOARD CN307
1 DP ON/OFF
2 COL
3 HUE
4 SHARP
5 GND
CN206 5P BLK :S-MICRO
IC11 CX7916
VCC H OUT1 OUT2 GND V
Q325 DTC144EK
Q326 DTC144EK
Q321 DTC144EK
Q314 2SC2712
Q327 2SC2712
D201 1S2837
D303 1S2837
D304 RD4.3MB1
L201 4.7μH
FL1
EMI
BA
PAL, SECAM NTSC DECODER
B-SS1562<U/C>-BA.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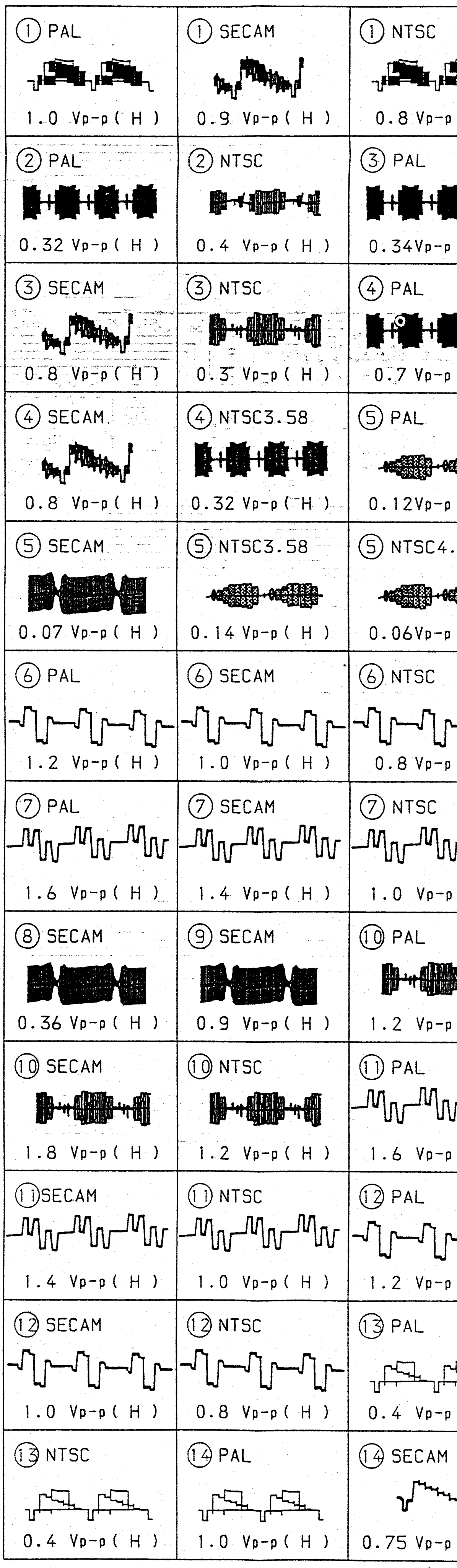
20
21
22
CN203
9P
BLK
:S-MICRO
9 B-Y
8 GND
7 SYNC
6 GND
5 Y/VIDEO(Y)
4 GND
3 C (R-Y)
2 GND
1 YC/VIDEO
TO QA BOARD
CN111
Q305
2SC2712
R305
100
:CHIP
5.6
R407
2.2k
:CHIP
R312
47
:CHIP
4.9
R314
2.2k
:CHIP
C326
10
6.4
7.0
6.4
0
IC7
CX-894
6.4
5.6
A
C
C354
1000p
B:CHIP
CN204
7P
RED
:S-MICRO
7 COMP/LINE
6 R
5 GND
4 G
3 GND
2 B
1 GND
TO BB BOARD
CN301
F
G
H
IC13
NJM7809FA
OUT IN
C349
47
16V
1 +15V
2 GND
3 -15V
4 PROTECT
TO QA BOARD
CN109
CN201
4P
WHT
:S-MICRO
JR1 0 :CHIP
JR2 0 :CHIP
R415
10k
:CHIP
R414
10k
:CHIP
7.0
0
9.2
Q343
DTC144EK
Q344
DTC144EK
<B>
<A>
CN202
4P
RED
:S-MICRO
1 +15V
2 GND
3 -15V
4 PROTECT
TO BB BOARD
CN302
8 ADV
7 DELAY
6 60/50
5 CLAMP.P.
4 C.BLK
3 GND
2 CODE1
1 CODE2
TO BB BOARD
CN305
CN205
8P
WHT
:S-MICRO
IC14
NJM79L12A
OUT IN
L113
45μH
C341
47
16V
C342
100
25V
IC16
NJM7812FA
OUT IN
D108
V06C
L114
45μH
C317
100
16V
C321
100
25V
C319
0.01
B:CHIP
R365
270
2W
:RS
R404
270
2W
:RS
TP12 TP13
5V
IC17
NJM7805FA
C322
0.01
B:CHIP
C318
47
16V
C324
100
25V
15V
F
G
H
1 DP ON/OFF
2 COL
3 HUE
4 SHARP
5 GND
TO BB BOARD
CN307
CN206
5P
BLK
:S-MICRO
C346
10
R374
1.5k
:CHIP
R378
56k
:CHIP
R373
100
:RN-CP
R375
100
:RN-CP
3.9
C338
10
Q338
2SC2712
3.3
C337
6p
:CHIP
R377
27k
:CHIP
R376
3.3k
:CHIP
R372
100
:RN-CP
BA
PAL, SECAM
NTSC
DECODER
B-SS1562<U/C>-BA.

BA BOARD

Ref. No.	OPERATION
IC1	SYSTEM SW
IC2	DECODER
IC3	TRANSIENT IMPROVE
IC5	CLOCK GEN
IC6	Y SW -1
IC7	Y SW -2
IC8	MATRIX
IC10	COMB FILTER
IC11	50/60 DET
IC12	SHARPNESS CONT
IC13	9V REG
IC14	−12V REG
IC15	SCP GEN
IC16	12V REG
IC17	5V REG
Q1	+5V PROT -1
Q2	YC/VIDEO SW
Q3	BUFF
Q4	+5V PROT -2
Q7	C BUFF -1
Q8	SW
Q9	VIDEO AMP -1
Q10	VIDEO AMP -2
Q11	VIDEO BUFF
Q12	Y BUFF -1
Q13	Y BUFF -2
Q14	C BUFF -2
Q15	SW
Q16	NT SW
Q17	C BUFF -3
Q18	CLAMP
Q19	LIMITER -1
Q20	LIMITER -2
Q21	SW
Q22	SW
Q23	W/B SW
Q24	+12V PROT -1
Q25	+12V PROT -2
Q26	V AMP
Q27	V BUFF
Q28	SW
Q29	V BUFF
Q30	V AMP
Q33	Y BUFF
Q35	YC/VIDEO SW
Q36	LIMITER
Q37	ID SW
Q38	NT SW
Q39	CLOCK BUFF
Q40	CLOCK BUFF
Q41	PAL SW
Q42	PAL SW
Q43	SW
Q44	CODE SW
Q45	SW
Q52	Y BUFF -3
Q118	Y BUFF -2
Q119	Y AMP
Q120	Y AMP
Q201	PAL SW
Q202	CLOCK BUFF
Q203	CLOCK BUFF
Q204	NTSC SW
Q205	CLOCK AMP
Q206	CLOCK AMP
Q207	CLOCK BUFF
Q208	SW
Q209	Y BUFF
Q210	Y BUFF
Q212	C BUFF
Q213	C BUFF

Ref. No.	OPERATION
Q301	DP SW
Q302	BLK BUFF
Q303	B–Y BUFF
Q304	R–Y BUFF
Q305	SYNC BUFF
Q306	R BUFF
Q307	G BUFF
Q308	B BUFF
Q309	SYSTEM SW
Q310	SYSTEM SW
Q311	SYSTEM SW
Q312	SYSTEM SW
Q313	Y BUFF
Q314	Y BUFF
Q315	COMP/LINE SW
Q317	Y AMP
Q318	Y AMP
Q321	50/60 SW
Q323	PHASE SW
Q324	PHASE SW
Q325	50/60 SW
Q326	VD SW
Q327	Y BUFF
Q328	COL BUFF
Q329	COL BUFF
Q330	HUE BUFF
Q331	HUE BUFF
Q332	SHARP BUFF
Q333	SHARP BUFF
Q336	Y BUFF
Q337	Y AMP
Q338	Y AMP
Q339	Y BUFF
Q340	Y BUFF
Q341	Y BUFF
Q342	Y BUFF
Q343	DELAY SW
Q344	DELAY SW
Q350	SW
Q360	PHASE SW
D1	SYSTEM SW
D2	SYSTEM SW
D3	SYSTEM SW
D4	SYSTEM SW
D5	SYSTEM SW
D6	SYSTEM SW
D7	SYSTEM SW
D8	PROTECTOR
D9	PROTECTOR
D10	LEVEL SHIFT
D12	SYSTEM SW
D13	SYSTEM SW
D14	SYSTEM SW
D101	LEVEL SHIFT
D102	LEVEL SHIFT
D103	SYSTEM SW
D107	OR
D108	PROTECTOR
D110	SECAM LIMITER
D112	SYSTEM SW
D113	SYSTEM SW
D118	SYSTEM SW
D119	SYSTEM SW
D130	SYSTEM SW
D201	CLAMP
D301	LEVEL SHIFT
D303	LIMITER
D304	LIMITER
D305	LEVEL SHIFT

BA BOARD

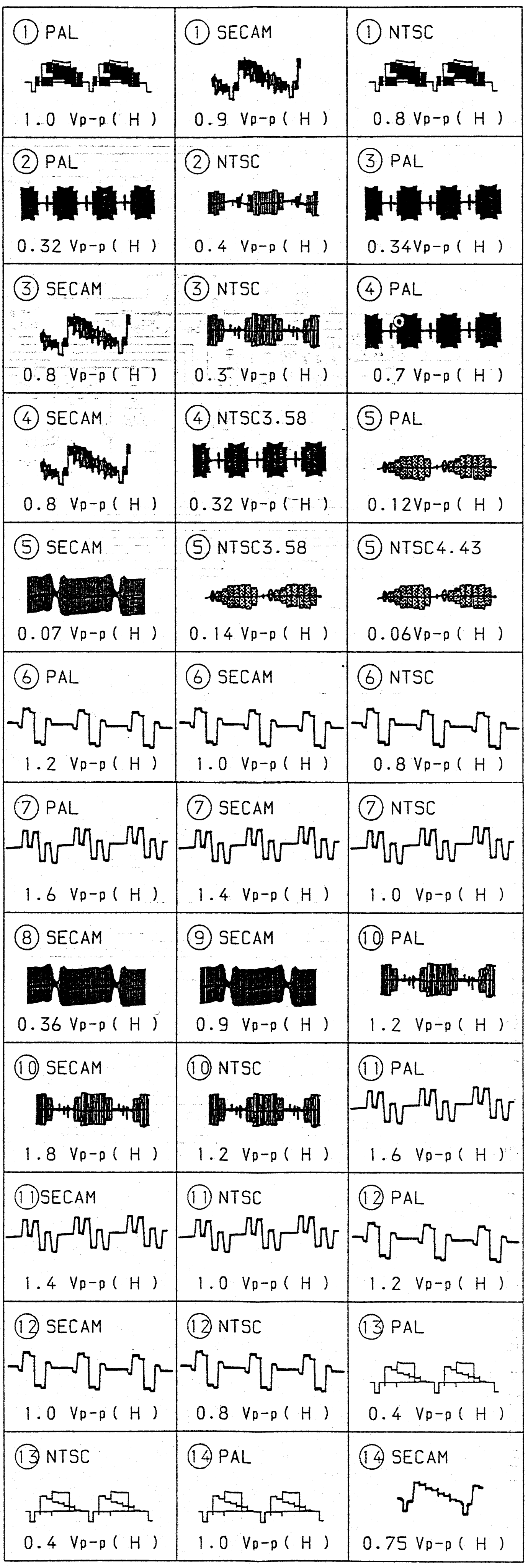


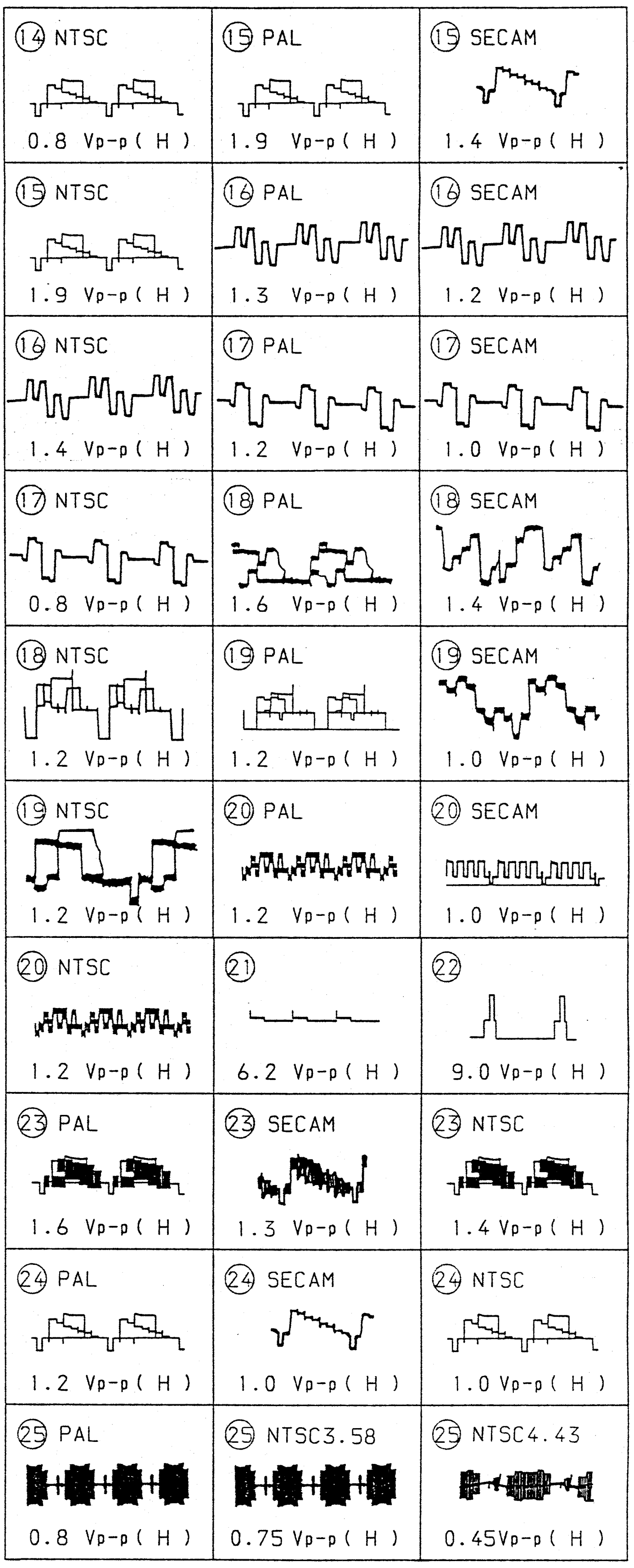
BA BOARD

Ref. No.	OPERATION
IC1	SYSTEM SW
IC2	DECODER
IC3	TRANSIENT IMPROVE
IC5	CLOCK GEN
IC6	Y SW -1
IC7	Y SW -2
IC8	MATRIX
IC10	COMB FILTER
IC11	50/60 DET
IC12	SHARPNESS CONT
IC13	9V REG
IC14	−12V REG
IC15	SCP GEN
IC16	12V REG
IC17	5V REG
Q1	+5V PROT -1
Q2	YC/VIDEO SW
Q3	BUFF
Q4	+5V PROT -2
Q7	C BUFF -1
Q8	SW
Q9	VIDEO AMP -1
Q10	VIDEO AMP -2
Q11	VIDEO BUFF
Q12	Y BUFF -1
Q13	Y BUFF -2
Q14	C BUFF -2
Q15	SW
Q16	NT SW
Q17	C BUFF -3
Q18	CLAMP
Q19	LIMITER -1
Q20	LIMITER -2
Q21	SW
Q22	SW
Q23	W/B SW
Q24	+12V PROT -1
Q25	+12V PROT -2
Q26	V AMP
Q27	V BUFF
Q28	SW
Q29	V BUFF
Q30	V AMP
Q33	Y BUFF
Q35	YC/VIDEO SW
Q36	LIMITER
Q37	ID SW
Q38	NT SW
Q39	CLOCK BUFF
Q40	CLOCK BUFF
Q41	PAL SW
Q42	PAL SW
Q43	SW
Q44	CODE SW
Q45	SW
Q52	Y BUFF -3
Q118	Y BUFF -2
Q119	Y AMP
Q120	Y AMP
Q201	PAL SW
Q202	CLOCK BUFF
Q203	CLOCK BUFF
Q204	NTSC SW
Q205	CLOCK AMP
Q206	CLOCK AMP
Q207	CLOCK BUFF
Q208	SW
Q209	Y BUFF
Q210	Y BUFF
Q212	C BUFF
Q213	C BUFF

Ref. No.	OPERATION
Q301	DP SW
Q302	BLK BUFF
Q303	B–Y BUFF
Q304	R–Y BUFF
Q305	SYNC BUFF
Q306	R BUFF
Q307	G BUFF
Q308	B BUFF
Q309	SYSTEM SW
Q310	SYSTEM SW
Q311	SYSTEM SW
Q312	SYSTEM SW
Q313	Y BUFF
Q314	Y BUFF
Q315	COMP/LINE SW
Q317	Y AMP
Q318	Y AMP
Q321	50/60 SW
Q323	PHASE SW
Q324	PHASE SW
Q325	50/60 SW
Q326	VD SW
Q327	Y BUFF
Q328	COL BUFF
Q329	COL BUFF
Q330	HUE BUFF
Q331	HUE BUFF
Q332	SHARP BUFF
Q333	SHARP BUFF
Q336	Y BUFF
Q337	Y AMP
Q338	Y AMP
Q339	Y BUFF
Q340	Y BUFF
Q341	Y BUFF
Q342	Y BUFF
Q343	DELAY SW
Q344	DELAY SW
Q350	SW
Q360	PHASE SW
D1	SYSTEM SW
D2	SYSTEM SW
D3	SYSTEM SW
D4	SYSTEM SW
D5	SYSTEM SW
D6	SYSTEM SW
D7	SYSTEM SW
D8	PROTECTOR
D9	PROTECTOR
D10	LEVEL SHIFT
D12	SYSTEM SW
D13	SYSTEM SW
D14	SYSTEM SW
D101	LEVEL SHIFT
D102	LEVEL SHIFT
D103	SYSTEM SW
D107	OR
D108	PROTECTOR
D110	SECAM LIMITER
D112	SYSTEM SW
D113	SYSTEM SW
D118	SYSTEM SW
D119	SYSTEM SW
D130	SYSTEM SW
D201	CLAMP
D301	LEVEL SHIFT
D303	LIMITER
D304	LIMITER
D305	LEVEL SHIFT

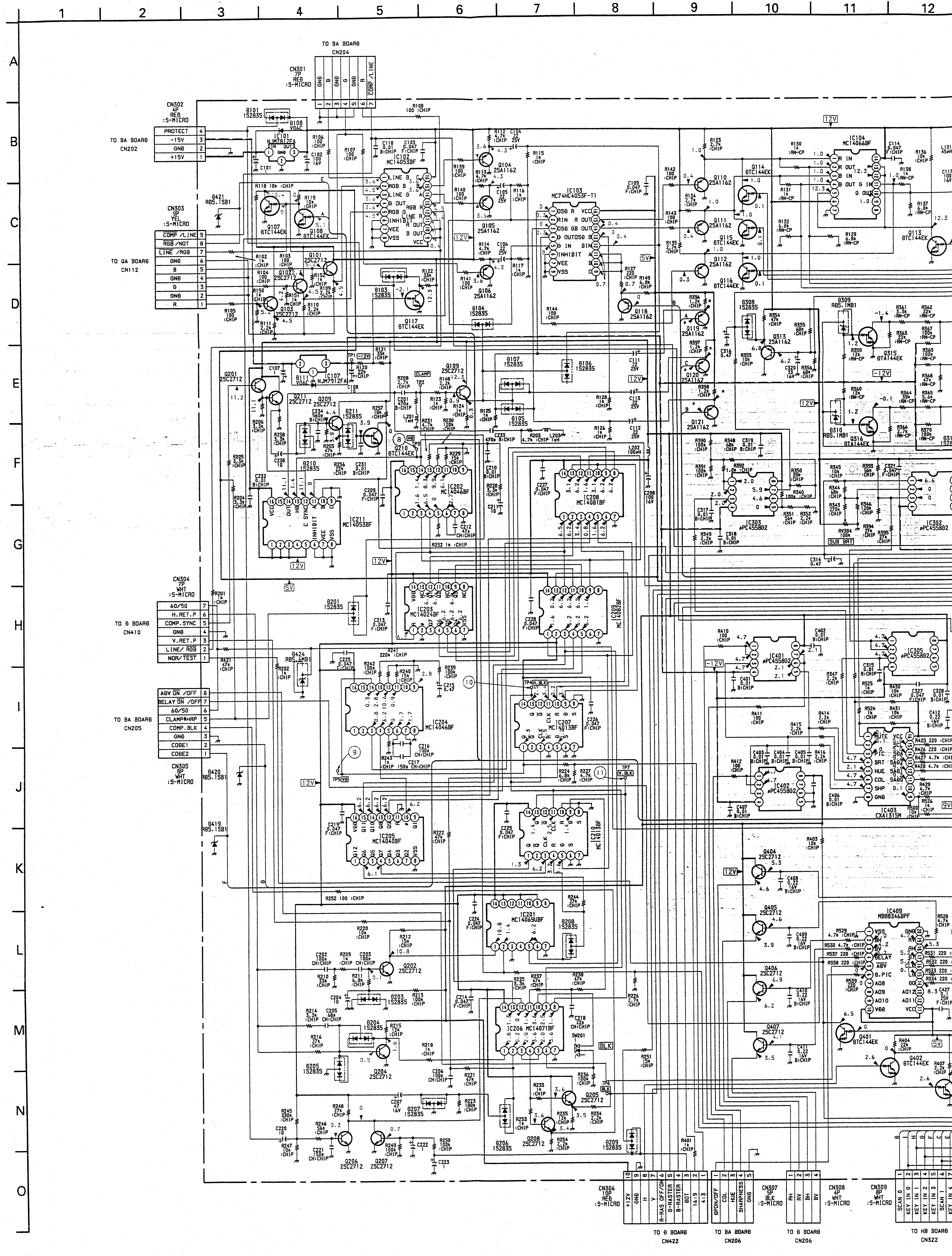
BA BOARD

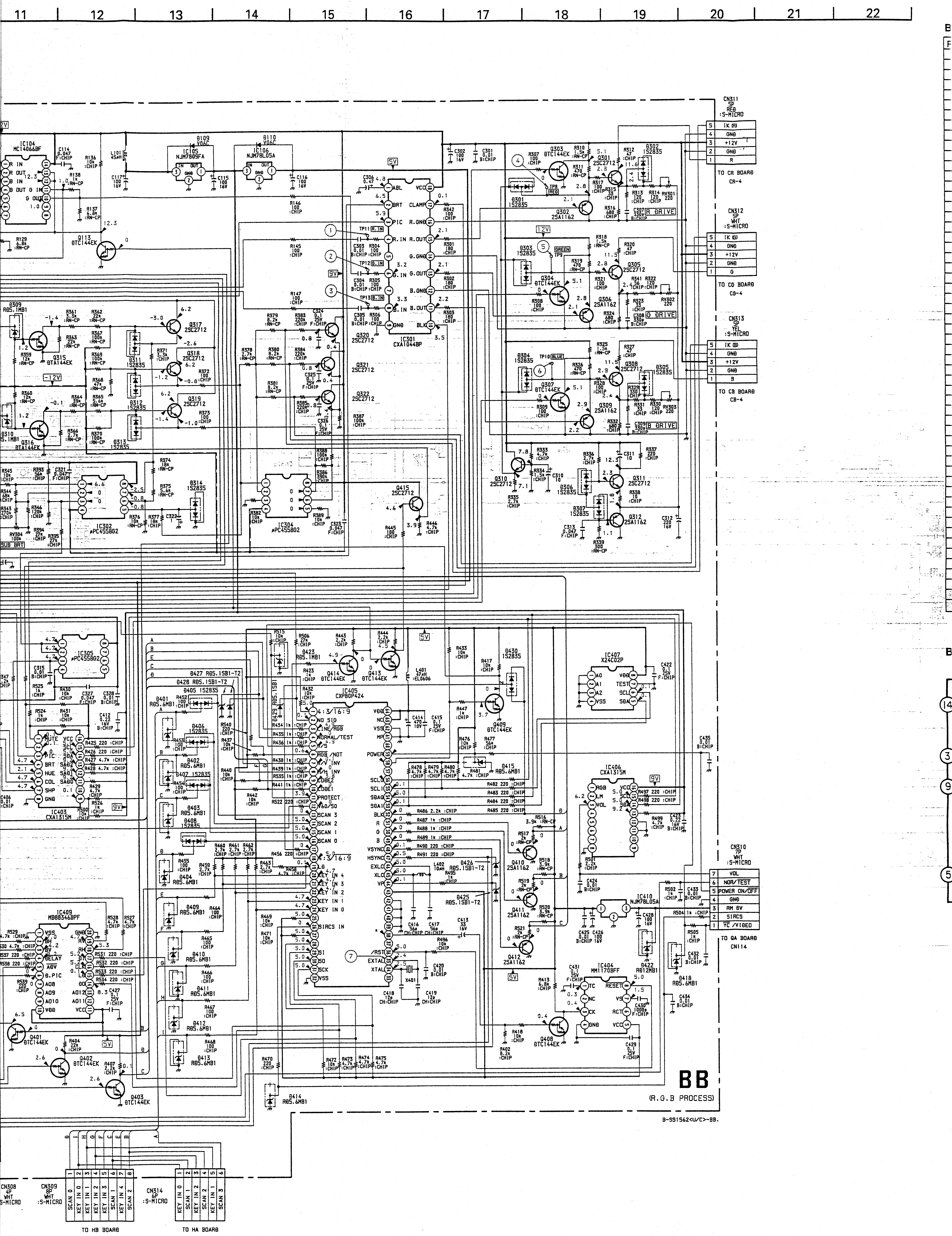




Schematic diagram
← BA board

Schematic diagram
BB board →


TO BA BOARD CN204
CN301 7P RED :S-MICRO
GND B GND G GND R COMP/LINE
CN302 4P RED :S-MICRO
PROTECT -15V GND +15V
TO BA BOARD CN202
CN303 9P YEL :S-MICRO
COMP/LINE RGB/NOT LINE/RGB GND B GND G GND R
TO QA BOARD CN112
CN304 7P WHT :S-MICRO
60/50 H.RET.P COMP.SYNC GND V.RET.P LINE/RGB NOR/TEST
TO B BOARD CN410
ABV ON/OFF DELAY ON/OFF 60/50 CLAMP&HRP COMP.BLK GND CODE1 CODE2
TO BA BOARD CN205
CN305 8P WHT :S-MICRO
IC101 NJM7812FA
IC102 MC14053BF
IC103 MC74HC4053F-T1
IC104 MC14066BF
IC107 NJM7912FA
IC201 MC14069UBF
IC202 MC14046BF
IC203 MC14024BF
IC204 MC14046BF
IC205 MC14040BF
IC206 MC14071BF
IC207 MC14013BF
IC208 MC14081BF
IC209 MC14082BF
IC210 MC14013BF
IC211 MC14053BF
IC302 μPC4558G2
IC303 μPC4558G2
IC305 μPC4558G2
IC401 μPC4558G2
IC402 μPC4558G2
IC403 CXA1315M
IC409 MB88346BPF
12V -12V 5V 9V
CLAMP H.BLK V.BLK BLK SUB BRT
SW201
CN306 10P RED :S-MICRO
+12V GND H V R-RAS OFF/ON G-RASTER B-RASTER DOT 16:9 4:3
TO B BOARD CN422
CN307 5P BLK :S-MICRO
OPDN/OFF COL HUE SHARPNESS GND
TO BA BOARD CN206
CN308 4P WHT :S-MICRO
RH RV BH BV
TO B BOARD CN206
CN309 8P WHT :S-MICRO
SCAN 0 KEY IN 0 KEY IN 1 KEY IN 2 KEY IN 3 SCAN 1
TO HB BOARD CN322
1 2 3 4 5 6 7 8 9 10 11 12
A B C D E F G H I J K L M N O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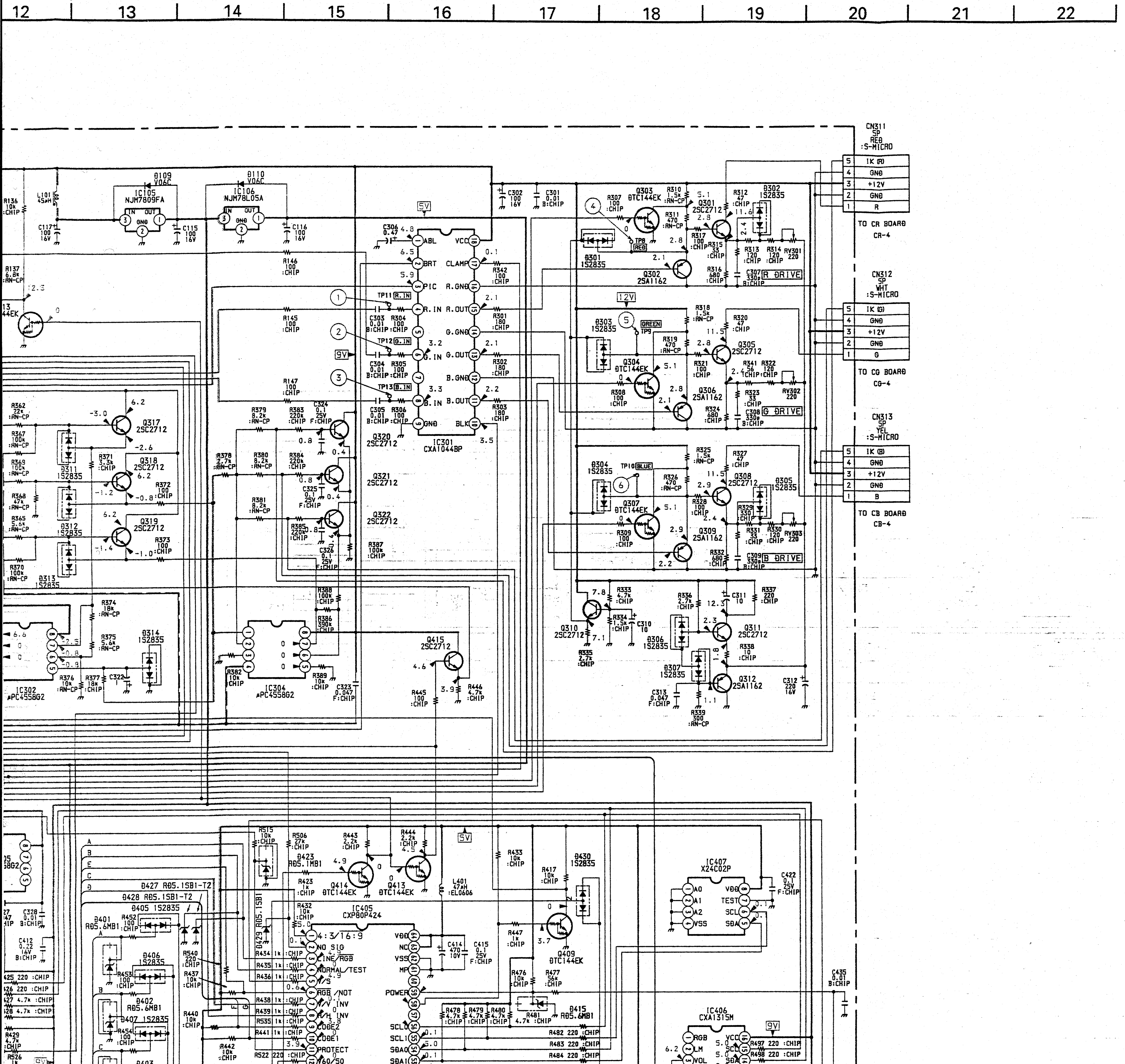
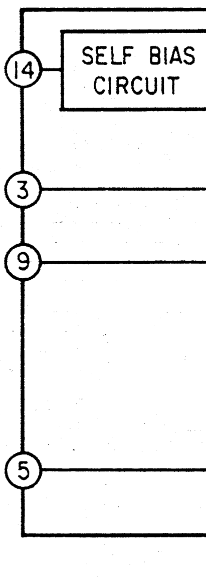
22
IC104 MC14066BF
IC105 NJM7805FA
IC106 NJM78L05A
D109 VO6C
D110 VO6C
L101 45μH
Q113 DTC144EK
IC301 CXA1044BP
ABL
VCC
BRT
CLAMP
PIC
R.GND
R.IN
R.OUT
G.GND
G.IN
G.OUT
B.GND
B.IN
B.OUT
GND
BLK
TP11 R.IN
TP12 G.IN
TP13 B.IN
Q309 RD5.1MB1
Q315 DTA144EK
Q316 DTA144EK
Q310 RD5.1MB1
Q317 2SC2712
Q318 2SC2712
Q319 2SC2712
D311 1S2835
D312 1S2835
D313 1S2835
Q320 2SC2712
Q321 2SC2712
Q322 2SC2712
IC302 μPC4558G2
IC304 μPC4558G2
D314 1S2835
Q415 2SC2712
SUB BRT
CN311 5P RED :S-MICRO
IK (R)
GND
+12V
GND
R
TO CR BOARD CR-4
Q303 DTC144EK
Q301 2SC2712
D302 1S2835
D301 1S2835
Q302 2SA1162
TP8 RED
R DRIVE
CN312 5P WHT :S-MICRO
IK (G)
GND
+12V
GND
G
TO CG BOARD CG-4
TP9 GREEN
D303 1S2835
Q304 DTC144EK
Q305 2SC2712
Q306 2SA1162
G DRIVE
CN313 5P YEL :S-MICRO
IK (B)
GND
+12V
GND
B
TO CB BOARD CB-4
TP10 BLUE
D304 1S2835
Q307 DTC144EK
Q308 2SC2712
D305 1S2835
Q309 2SA1162
B DRIVE
Q310 2SC2712
Q311 2SC2712
D306 1S2835
D307 1S2835
Q312 2SA1162
IC305 μPC4558G2
IC403 CXA1315M
MUTE
VCC
SCL
SDA
PIC
BRT
HUE
COL
SHP
GND
SAD1
SAD0
IC405 CXP80P424
4:3/16:9
NO SIG
LINE/RGB
NORMAL/TEST
RGB /NOT
V/ INV
H/ INV
ODDE
PROTECT
60/50
SCAN 3
SCAN 2
SCAN 1
SCAN 0
KEY IN 4
KEY IN 3
KEY IN 2
KEY IN 1
KEY IN 0
SIRCS IN
SI
SO
SCK
VSS
VDD
NC
MP
POWER
SCL1
SCL0
SDA0
SDA1
BLK
R
G
B
VSYNC
HSYNC
EXLC
XLC
VP
/RST
EXTAL
XTAL
X401
Q423 RD5.1MB1
Q414 DTC144EK
Q413 DTC144EK
L401 27μH EL0606
Q427 RD5.1SB1-T2
Q428 RD5.1SB1-T2
Q405 1S2835
Q401 RD5.6MB1
Q406 1S2835
Q402 RD5.6MB1
Q407 1S2835
Q403 RD5.6MB1
Q408 1S2835
Q404 RD5.6MB1
Q409 RD5.6MB1
Q410 RD5.6MB1
Q411 RD5.6MB1
Q412 RD5.6MB1
Q413 RD5.6MB1
Q414 RD5.6MB1
Q429 RD5.1SB1
Q430 1S2835
Q409 DTC144EK
Q415 RD5.6MB1
L402 10μH
Q426 RD5.1SB1-T2
Q425 RD5.1SB1-T2
Q410 2SA1162
Q411 2SA1162
Q412 2SA1162
IC407 X24C02P
A0
A1
A2
VSS
VDD
TEST
SCL
SDA
IC406 CXA1315M
RGB
VOL
IC410 NJM78L05A
IC404 MM1170BFF
TC
NC
CK
GND
RESET
VS
RCT
VCC
Q422 RD12MB1
Q418 RD5.6MB1
Q408 DTC144EK
IC409 MB88346BPF
VSS
DELAY
ABV
B.PIC
AO8
AO9
AO10
VDD
GND
AO11
AO12
VCC
Q401 DTC144EK
Q402 DTC144EK
Q403 DTC144EK
CN310 7P WHT :S-MICRO
VOL
NOR/TEST
POWER ON/OFF
GND
RM 8V
SIRCS
YC /VIDEO
TO QA BOARD CN114
BB
(R.G.B PROCESS)
B-SS1562<U/C>-BB.
CN308 4P WHT :S-MICRO
CN309 8P WHT :S-MICRO
SCAN 0
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
KEY IN 4
GND
TO HB BOARD CN322
CN314 6P :S-MICRO
KEY IN 0
SCAN 1
SCAN 2
SCAN 3
TO HA BOARD CN321
5V
9V
12V
-12V


12
13
14
15
16
17
18
19
20
21
22
IC105 NJM7809FA
IC106 NJM78L05A
IC301 CXA1044BP
IC302 μPC4558G2
IC304 μPC4558G2
IC405 CXP80P424
IC406 CXA1315M
IC407 X24C02P
IC410 NJM78L05A
IC404 MM1170BFF
CN311 5P RED :S-MICRO
TO CR BOARD CR-4
CN312 5P WHT :S-MICRO
TO CG BOARD CG-4
CN313 5P YEL :S-MICRO
TO CB BOARD CB-4
R DRIVE
G DRIVE
B DRIVE
CN310 7P WHT :S-MICRO
VOL
NOR/TEST
POWER ON/OFF
GND
RM 8V
SIRCS
YC /VIDEO
TO QA BOARD CN114
CN314 6P :S-MICRO
KEY IN 0
SCAN 1
SCAN 2
KEY IN 1
SCAN 0
SCAN 3
TO HA BOARD CN321
HB BOARD CN322
4:3/16:9
NO SIG
LINE/RGB
NORMAL/TEST
RGB /NOT
V INV
H INV
CODE2
CODE1
PROTECT
60/50
SCAN 3
SCAN 2
SCAN 1
SCAN 0
KEY IN 4
KEY IN 3
KEY IN 2
KEY IN 1
KEY IN 0
SIRCS IN
BB
(R.G.B PROCESS)
B-SS1562<U/C>-BB.

BB BOARD

Ref. No.	OPE
IC101	+12V RE
IC102	RGB SEL
IC103	SUPERIM
IC104	DRIVE S
IC105	+9V REC
IC106	+5V REC
IC107	−12V RE
IC201	INVERT
IC202	H PLL
IC203	H COUNT
IC204	V PLL
IC205	V COUNT
IC206	OR
IC207	H IV BLK
IC208	OR
IC209	AND
IC210	V HV BLK
IC211	CLAMP S
IC301	PIC/BRT
IC302	SUB BRT
IC303	PIC BUFF
IC304	ABL
IC305	BRT BUF
IC401	COLOR E
IC402	SHARP E
IC403	CONTRO
IC404	RESET
IC405	μ-CON
IC406	VOL CON
IC407	NVM
IC409	REGI CO
IC410	+5V REC
Q101	B BUFF
Q102	G BUFF
Q103	R BUFF
Q104	B BUFF
Q105	R BUFF
Q106	G BUFF
Q107	INVERT
Q108	LINE/RG
Q109	CLAMP E
Q110	R BUFF
Q111	B BUFF
Q112	G BUFF
Q113	16 : 9 SW
Q114	R MUTE
Q115	B MUTE
Q116	G MUTE
Q117	−12V PF
Q118	OSD SW
Q119	OSD R B
Q120	OSD B B
Q121	OSD G B
Q201	C SYNC

BB BOARD IC20


14
SELF BIAS CIRCUIT
3
9
5

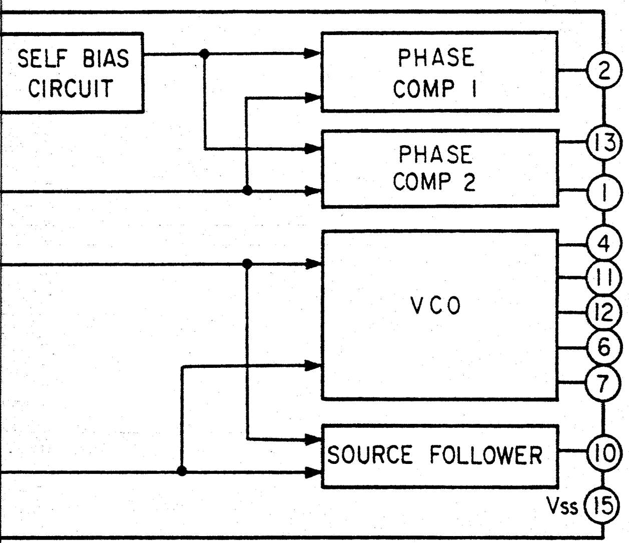
OARD

No.	OPERATION
01	+12V REG
02	RGB SELECT
03	SUPERIMPOSE
04	DRIVE SW
05	+9V REG
06	+5V REG
07	−12V REG
01	INVERT
02	H PLL
03	H COUNTER
04	V PLL
05	V COUNTER
06	OR
07	H IV BLK
08	OR
09	AND
10	V HV BLK
11	CLAMP SELECT
01	PIC/BRT CONT
02	SUB BRT
03	PIC BUFF
04	ABL
05	BRT BUFF
01	COLOR BUFF
02	SHARP BUFF
03	CONTROL
04	RESET
05	μ-CON
06	VOL CONTROL
07	NVM
09	REGI CONTROL
10	+5V REG
01	B BUFF
02	G BUFF
03	R BUFF
04	B BUFF
05	R BUFF
06	G BUFF
07	INVERT
08	LINE/RGB SW
09	CLAMP BUFF
10	R BUFF
11	B BUFF
12	G BUFF
13	16 : 9 SW
14	R MUTE SW
15	B MUTE SW
16	G MUTE SW
17	−12V PROT
18	OSD SW
19	OSD R BUFF -2
20	OSD B BUFF -2
21	OSD G BUFF -2
201	C SYNC BUFF -1

Ref. No.	OPERATION
Q202	HP INV
Q204	HP INV
Q205	BLK BUFF
Q206	DOT SW
Q207	DOT SW
Q208	BLK BUFF
Q209	NO SIG DET
Q210	NO SIG SW
Q211	C SYNC BUFF -2
Q301	R DRIVE
Q302	R BUFF
Q303	R RAS SW
Q304	G RAS SW
Q305	G DRIVE
Q306	G BUFF
Q307	B RAS SW
Q308	B DRIVE
Q309	B BUFF
Q310	LIMITER
Q311	BIAS
Q312	BIAS
Q313	PIC ABL
Q315	16 : 9 ABL SW
Q316	16 : 9 ABL SW
Q317	TOTAL ABL
Q318	PEAK ABL
Q319	S.T. ABL
Q320	IK (R) BUFF
Q321	IK (G) BUFF
Q322	IK (B) BUFF
Q401	NOR/TES SW
Q402	H INVERT
Q403	V INVERT
Q404	RH BUFF
Q405	RV BUFF
Q406	BH BUFF
Q407	BV BUFF
Q408	RST CLK
Q409	COMP/LINE SW
Q410	OSD R BUFF -1
Q411	OSD G BUFF -1
Q412	OSD B BUFF -1
Q413	4 : 3/16 : 9 SW -2
Q414	4 : 3/16 : 9 SW -1
Q415	4 : 3 LEVEL BUFF
D101	PROTECTOR
D103	PROTECTOR
D104	CLAMP
D105	CLAMP
D106	CLAMP
D107	CLAMP
D108	REG PROTECT
D109	REG PROTECT
D110	REG PROTECT

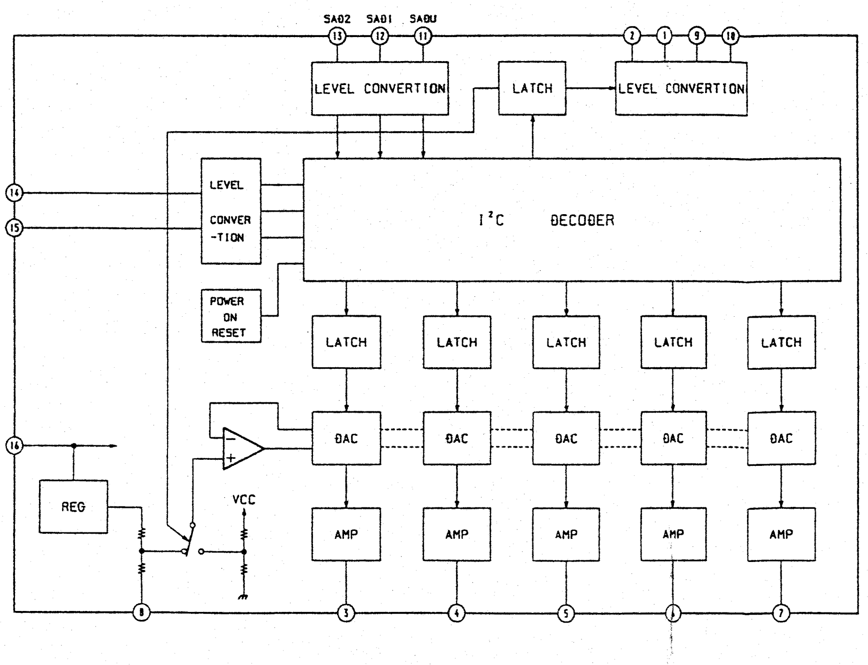
Ref. No.	OPERATION
D111	REG PROTECT
D201	LOW MAKE
D203	CLAMP
D204	HP SUP
D205	HP SUP
D206	VP DL
D207	VP DL
D208	V RESET SW
D209	BRT SW
D210	CLAMP
D211	CHARGE
D301	R LIMIT
D302	R BIAS
D303	G LIMIT
D304	B LIMIT
D305	B BIAS
D306	BIAS
D307	BIAS
D308	PIC ABL
D309	LEVEL SHIFT
D310	LEVEL SHIFT
D311	TOTAL ABL
D312	PEAK ABL
D313	S.T. ABL
D314	CLAMP
D401	LEVEL LIMIT
D402	LEVEL LIMIT
D403	LEVEL LIMIT
D404	LEVEL LIMIT
D405	SHORT PROTECT
D406	SHORT PROTECT
D407	SHORT PROTECT
D408	SHORT PROTECT
D409	LEVEL LIMIT
D410	LEVEL LIMIT
D411	LEVEL LIMIT
D412	LEVEL LIMIT
D413	LEVEL LIMIT
D414	LEVEL LIMIT
D415	LEVEL LIMIT
D418	LEVEL
D419	LIMIT
D420	LIMIT
D421	LIMIT
D422	LIMIT
D423	LIMIT
D424	LEVEL LIMIT
D425	LEVEL LIMIT
D456	LEVEL LIMIT
D427	LEVEL LIMIT
D428	LEVEL LIMIT
D429	LEVEL LIMIT
D430	CLAMP

OARD IC202, 204 MC14046BF



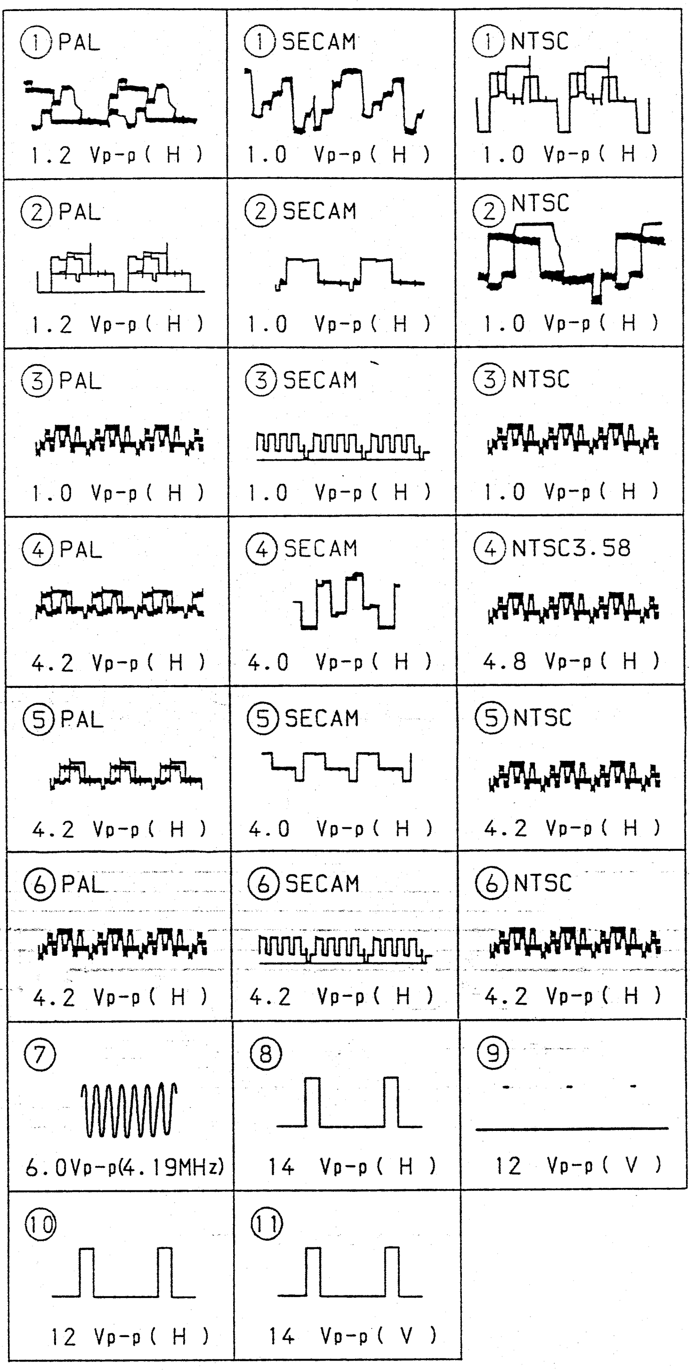
SELF BIAS CIRCUIT
PHASE COMP 1
PHASE COMP 2
VCO
SOURCE FOLLOWER
Vss
2
13
1
4
11
12
6
7
10
15

BB BOARD IC403, 406 CXA1315M

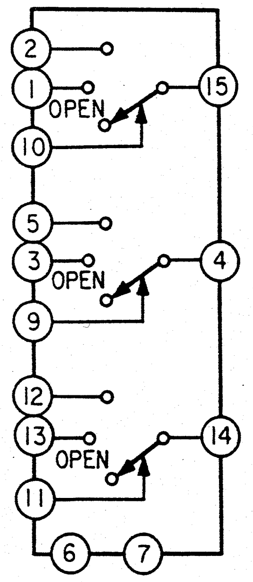


SA02
SA01
SA0U
13
12
11
2
1
9
10
LEVEL CONVERTION
LATCH
LEVEL CONVERTION
LEVEL CONVER -TION
I²C DECODER
POWER ON RESET
14
15
16
LATCH
LATCH
LATCH
LATCH
LATCH
DAC
DAC
DAC
DAC
DAC
REG
VCC
AMP
AMP
AMP
AMP
AMP
8
3
4
5
6
7

BB BOARD

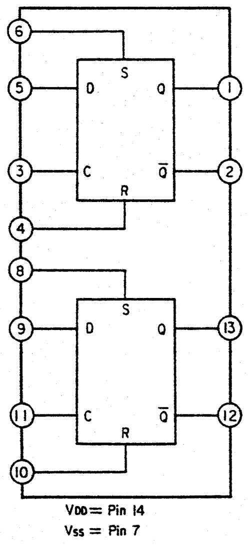


BB BOARD IC103 MC74HC4053F



2
1
10
15
OPEN
5
3
9
4
OPEN
12
13
11
14
OPEN
6
7

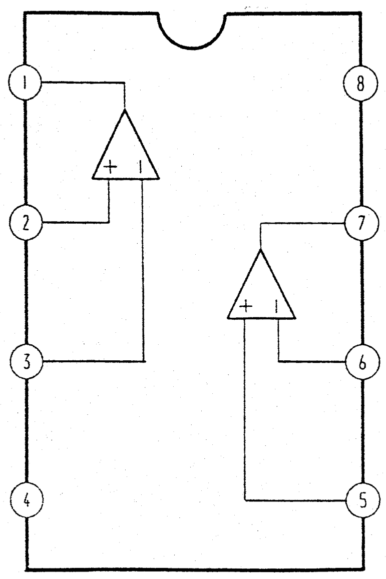
BB BOARD IC207, 210 MC14013BF



6
5
3
4
8
9
11
10
1
2
13
12
S
D
Q
C
Q̄
R
S
D
Q
C
Q̄
R

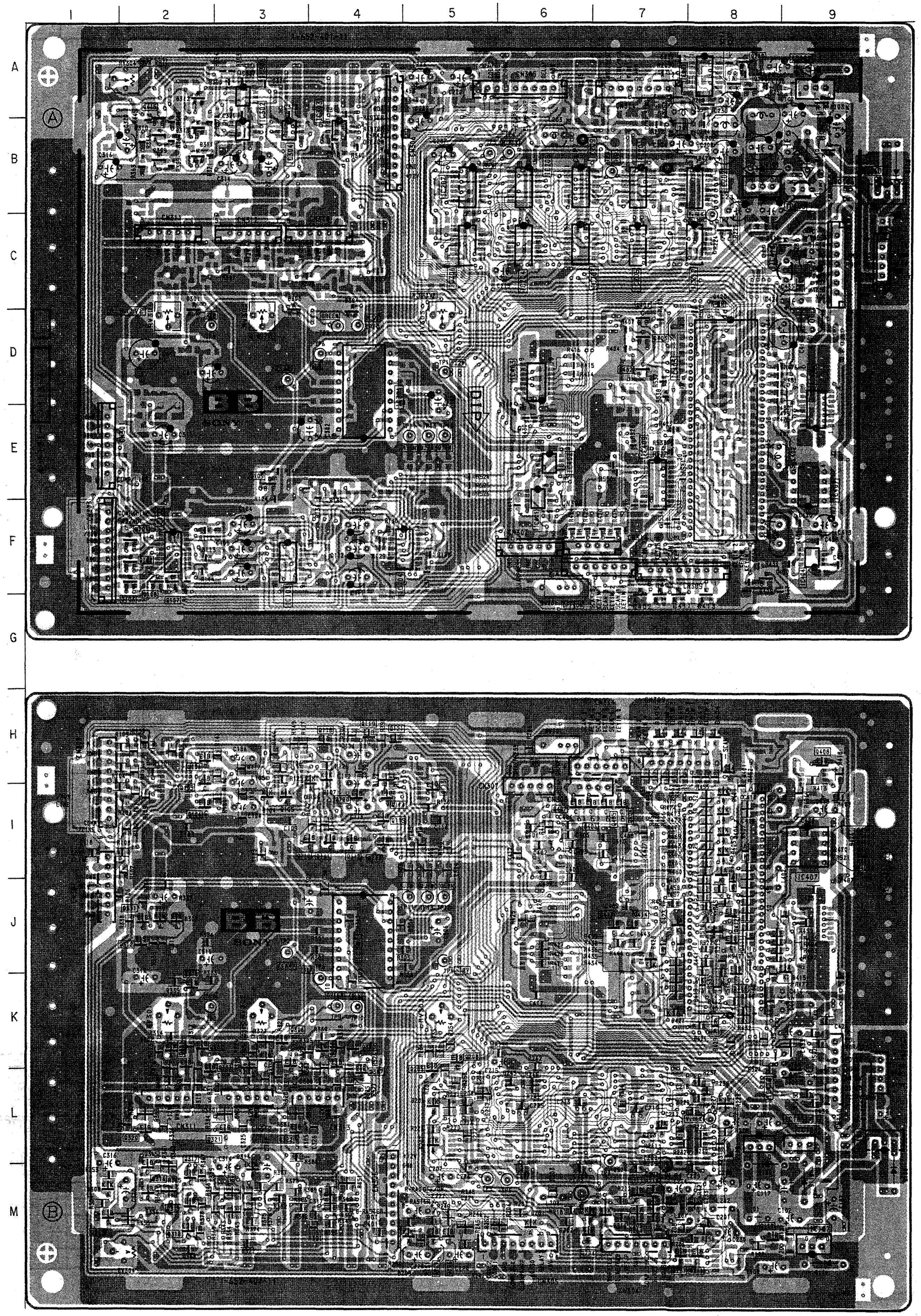
VDD = Pin 14
Vss = Pin 7

BB BOARD IC302 – 305, 401, 402 μPC4558G2



BB [RGB PROCESS]

– BB BOARD – <Component Side>



BB BOARD

IC	
IC101	B-9
IC102	F-2
IC103	F-3
IC104	F-4
IC105	B-8
IC106	B-9
IC107	A-9
IC201	B-7
IC202	B-8
IC203	C-6
IC204	C-6
IC205	C-7
IC206	C-5
IC207	B-5
IC208	B-6
IC209	B-6
IC210	C-8
IC211	A-8
IC301	D-4
IC302	B-3
IC303	B-4
IC304	B-3
IC305	A-3
IC401	F-6
IC402	E-6
IC403	D-6
IC404	F-9
IC405	D-8
IC406	D-9
IC407	E-9
IC409	E-7
IC410	C-8

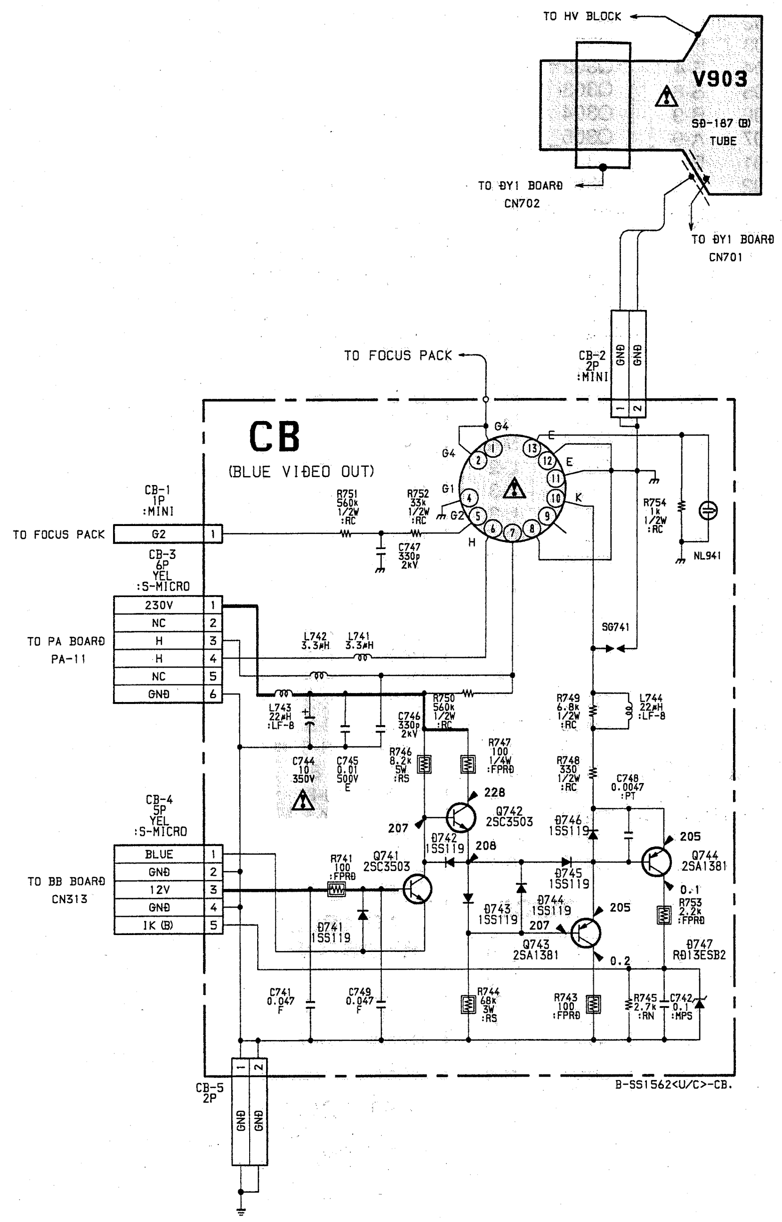
TRANSISTOR	
Q101	F-2
Q102	F-2
Q103	F-2
Q104	I-2
Q105	H-2
Q106	H-2
Q107	F-2
Q108	F-2
Q109	E-3
Q110	I-3
Q111	I-4
Q112	I-4
Q113	I-5
Q114	I-4
Q115	I-4
Q116	I-4
Q117	M-8
Q118	H-4
Q119	H-4
Q120	I-4
Q121	H-5
Q201	M-7
Q202	M-7
Q204	M-6
Q205	L-5
Q206	M-5
Q207	M-5
Q208	K-5
Q209	A-8
Q210	A-8
Q211	M-7
Q301	K-2
Q302	K-2
Q303	L-2
Q304	K-3
Q305	K-3
Q306	K-3
Q307	L-4
Q308	K-4
Q309	K-4
Q310	K-2
Q311	J-2
Q312	J-2
Q313	M-1
Q315	M-2
Q316	M-2
Q317	M-2
Q318	M-2
Q319	M-2
Q320	L-2
Q321	L-3
Q322	L-3
Q401	D-7
Q402	D-7
Q403	D-7
Q404	I-7
Q405	I-7
Q406	I-6
Q407	I-6
Q408	H-9
Q409	F-8
Q410	J-8
Q411	J-8
Q412	J-8
Q413	J-7
Q414	J-7
Q415	B-2

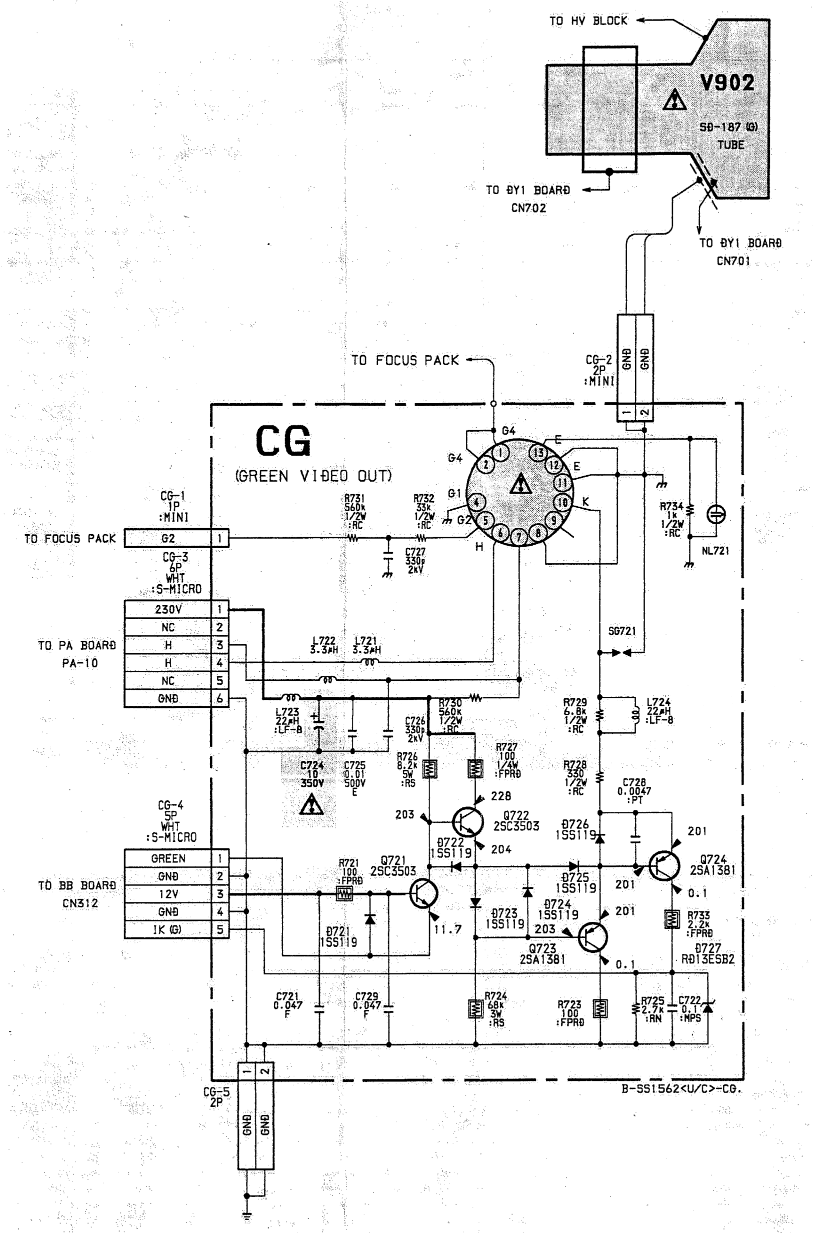
DIODE	
D101	B-9
D103	A-9
D104	I-3
D105	I-3
D106	H-3
D107	H-4
D108	B-9
D109	B-8
D110	B-9
D111	A-9
D201	M-6
D203	M-7
D204	M-6
D205	M-7
D206	L-5
D207	L-5
D208	L-7
D209	M-4
D210	A-8
D211	A-8
D301	D-2
D302	K-2
D303	D-3
D304	D-4
D305	K-4
D306	J-2
D307	J-2
D308	M-1
D309	B-2
D310	B-2
D311	B-2
D312	A-2
D313	B-2
D314	M-3
D401	H-8
D402	G-7
D403	G-7
D404	H-8
D405	I-8
D406	I-8
D407	I-8
D408	I-8
D409	H-7
D410	H-7
D411	G-7
D412	H-8
D413	G-8
D414	H-8
D415	K-9
D418	C-9
D419	K-8
D420	D-8
D421	K-8
D422	L-9
D423	J-8
D424	B-8
D425	I-8
D426	J-8
D427	K-7
D428	J-7
D429	K-8
D430	J-7

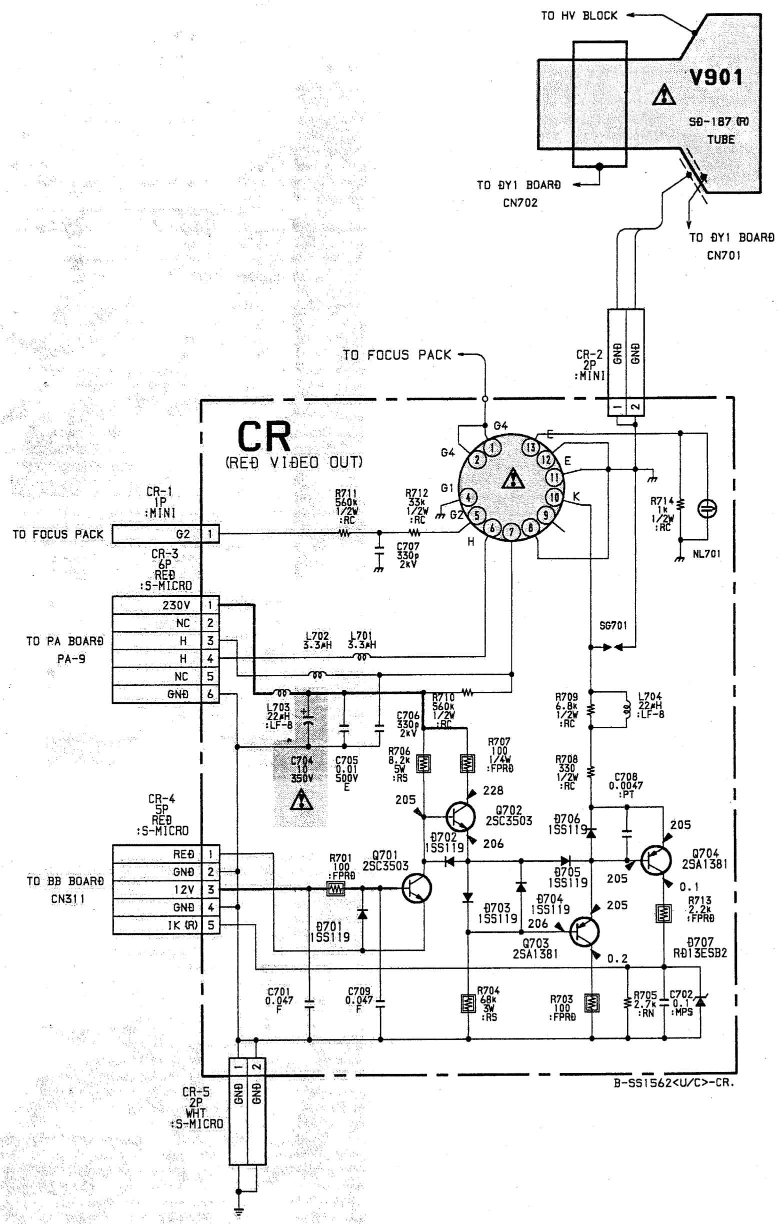
VARIABLE RESISTOR	
RV301	D-2
RV302	D-3
RV303	D-5
RV304	A-2

TEST POINT	
TP1	D-5
TP2	D-3
TP3	B-7
TP4	B-6
TP5	B-5
TP6	D-3
TP7	B-8
TP8	D-2
TP9	D-4
TP10	D-4
TP11	E-5
TP12	E-5
TP13	E-5

Note:
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear.


V903
SD-187 (B) TUBE
TO HV BLOCK
TO DY1 BOARD CN702
TO DY1 BOARD CN701
TO FOCUS PACK
CB-2 2P :MINI
CB
(BLUE VIDEO OUT)
CB-1 1P :MINI
TO FOCUS PACK
G2
CB-3 6P YEL :S-MICRO
230V
NC
H
H
NC
GND
TO PA BOARD PA-11
CB-4 5P YEL :S-MICRO
BLUE
GND
12V
GND
IK (B)
TO BB BOARD CN313
Q741 2SC3503
Q742 2SC3503
Q743 2SA1381
Q744 2SA1381
CB-5 2P
GND
GND
B-SS1562<U/C>-CB.


V902
SD-187 (G) TUBE
TO HV BLOCK
TO DY1 BOARD CN702
TO DY1 BOARD CN701
TO FOCUS PACK
CG-2 2P :MINI
CG
(GREEN VIDEO OUT)
CG-1 1P :MINI
TO FOCUS PACK
G2
CG-3 6P WHT :S-MICRO
230V
NC
H
H
NC
GND
TO PA BOARD PA-10
CG-4 5P WHT :S-MICRO
GREEN
GND
12V
GND
IK (G)
TO BB BOARD CN312
Q721 2SC3503
Q722 2SC3503
Q723 2SA1381
Q724 2SA1381
CG-5 2P
GND
GND
B-SS1562<U/C>-CG.


V901
SD-187 (R) TUBE
TO HV BLOCK
TO DY1 BOARD CN702
TO DY1 BOARD CN701
TO FOCUS PACK
CR-2 2P :MINI
CR
(RED VIDEO OUT)
CR-1 1P :MINI
TO FOCUS PACK
G2
CR-3 6P RED :S-MICRO
230V
NC
H
H
NC
GND
TO PA BOARD PA-9
CR-4 5P RED :S-MICRO
RED
GND
12V
GND
IK (R)
TO BB BOARD CN311
Q701 2SC3503
Q702 2SC3503
Q703 2SA1381
Q704 2SA1381
CR-5 2P WHT :S-MICRO
GND
GND
B-SS1562<U/C>-CR.

CB BOARD

Ref. No.	OPERATION
Q741	B VIDEO AMP
Q742	B VIDEO OUT
Q743	B–IK DET -1
Q744	B–IK DET -2
D741	B -PROTECT -1
D742	B -PROTECT -2
D743	B -BIAS
D744	B -PROTECT -3
D745	B -PROTECT -4
D746	B -PROTECT -5
D747	B -PROTECT -6

CG BOARD

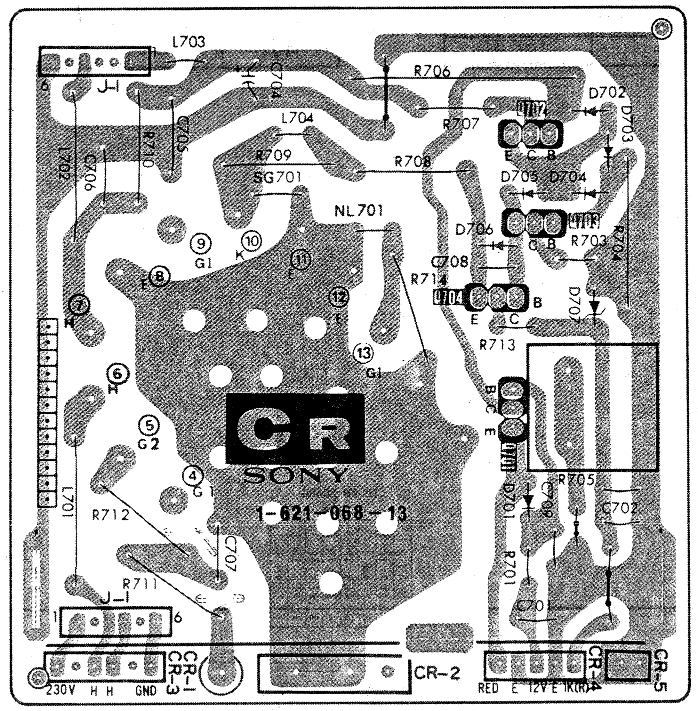
Ref. No.	OPERATION
Q721	G VIDEO AMP
Q722	G VIDEO OUT
Q723	G–IK DET -1
Q724	G–IK DET -2
D721	G -PROTECT -1
D722	G -PROTECT -2
D723	G -BIAS
D724	G -PROTECT -3
D725	G -PROTECT -4
D726	G -PROTECT -5
D727	G -PROTECT -6

CR BOARD

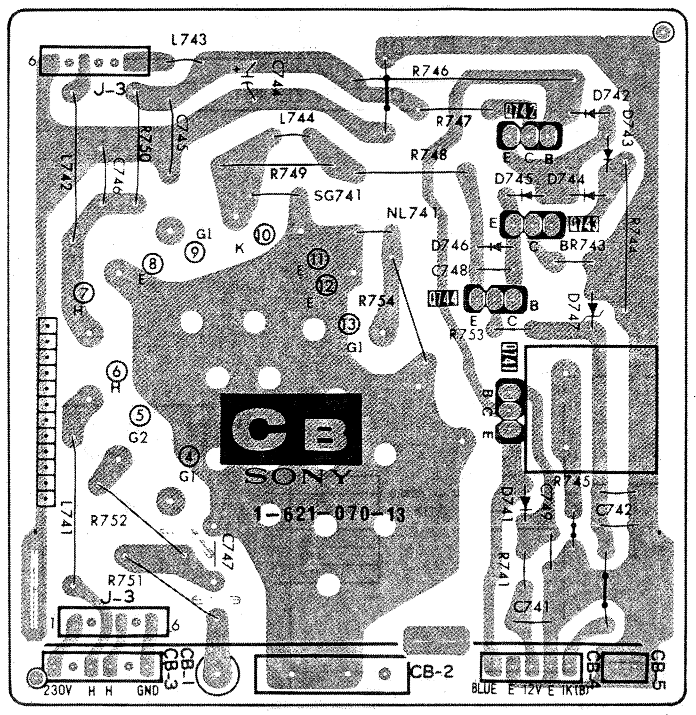
Ref. No.	OPERATION
Q701	R VIDEO AMP
Q702	R VIDEO OUT
Q703	R–IK DET -1
Q704	R–IK DET -2
D701	R -PROTECT -1
D702	R -PROTECT -2
D703	R -BIAS
D704	R -PROTECT -3
D705	R -PROTECT -4
D706	R -PROTECT -5
D707	R -PROTECT -6

CR [RED VIDEO OUT] **CG** [GREEN VIDEO OUT] **CB** [BLUE VIDEO OUT]

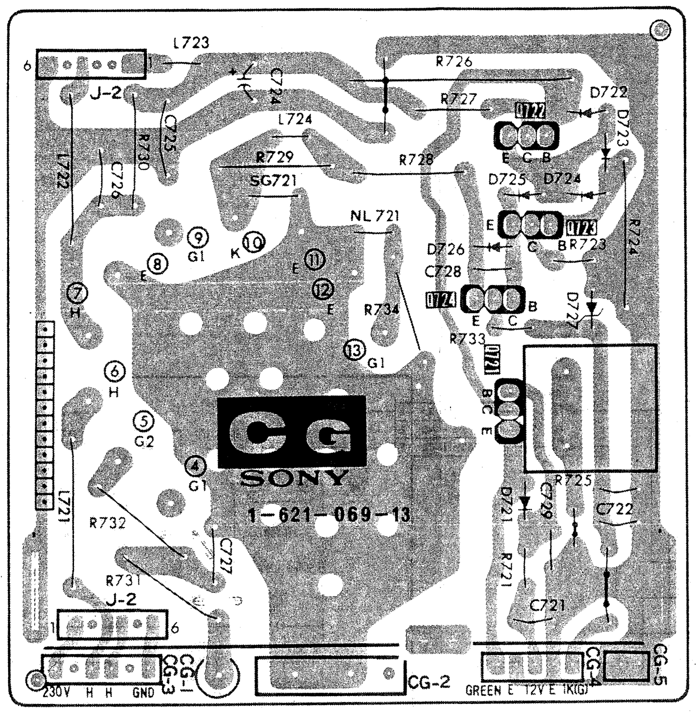
– CR BOARD –

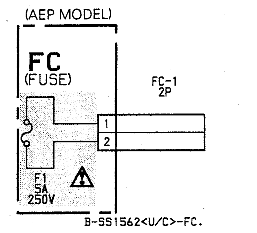

L703
J-1
C704
R706
D702
D703
R707
Q702
E C B
L704
C705
R710
L702
C706
R709
R708
SG701
D705
D704
NL701
D706
Q703
R703
R704
C708
R714
Q704
E B C
D707
R713
G1
K
E
H
G2
CR
SONY
1-621-068-13
Q701
B C E
R705
C702
D701
C709
L701
R712
C707
R711
R701
C701
CR-1
CR-3
CR-2
CR-4
CR-5
230V H H GND
RED E 12V E IK(R)

– CG BOARD –


L743
J-3
C744
R746
D742
D743
R747
Q742
E C B
L744
R750
C745
L742
C746
R749
R748
SG741
D745
D744
NL741
D746
Q743
BR743
R744
C748
R754
Q744
D747
R753
G1
K
E
H
G2
CB
SONY
1-621-070-13
Q741
B C E
R745
C742
D741
C749
L741
R752
C747
R751
R741
C741
CB-1
CB-3
CB-2
CB-4
CB-5
230V H H GND
BLUE E 12V E IK(B)

– CB BOARD –


L723
J-2
C724
R726
D722
D723
R727
Q722
E C B
L724
C725
R730
L722
C726
R729
R728
SG721
D725
D724
NL721
D726
Q723
BR723
R724
C728
R734
Q724
D727
R733
G1
K
E
H
G2
CG
SONY
1-621-069-13
Q721
B C E
R725
C722
D721
C729
L721
R732
C727
R731
R721
C721
CG-1
CG-3
CG-2
CG-4
CG-5
230V H H GND
GREEN E 12V E IK(G)


(AEP MODEL)
FC
(FUSE)
FC-1
2P
1
2
F1
5A
250V
B-SS1562<U/C>-FC.

FA BOARD

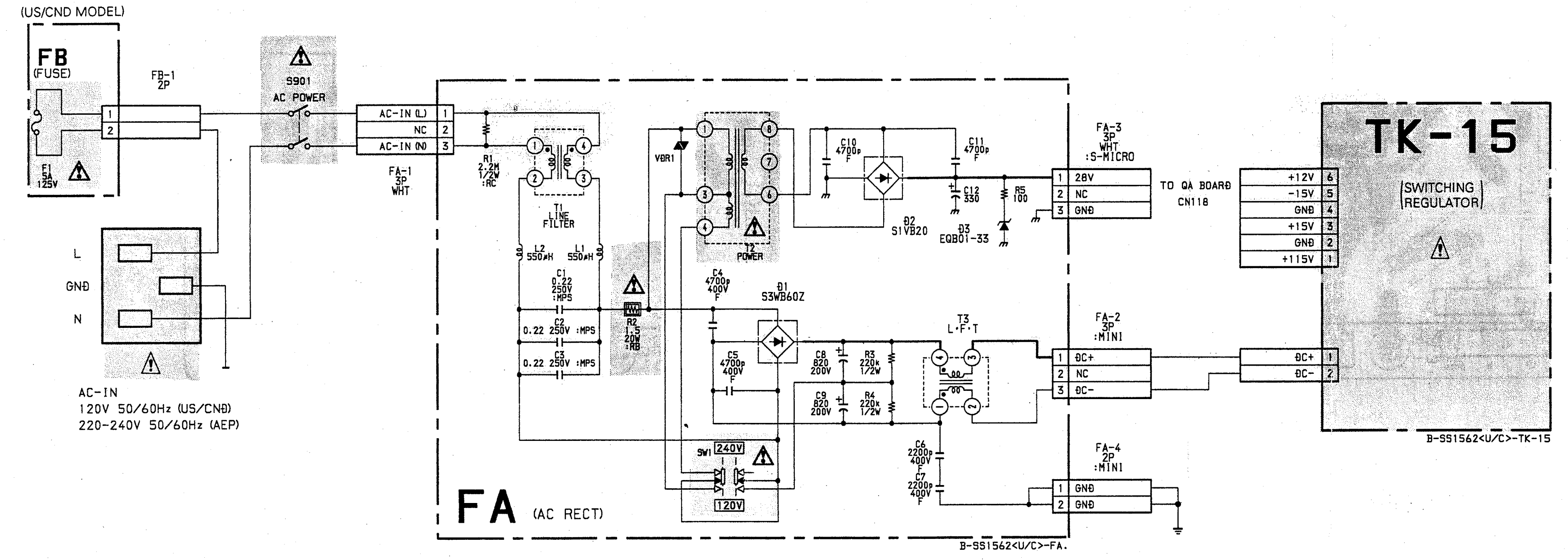
Ref. No.	OPERATION
D1	MAIN RECT
D2	RM RECT
D3	33V ZENER

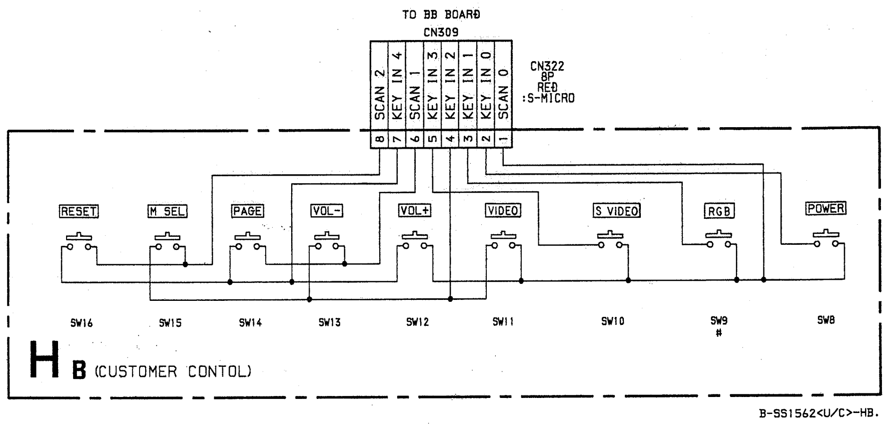
HB BOARD ＊MARK

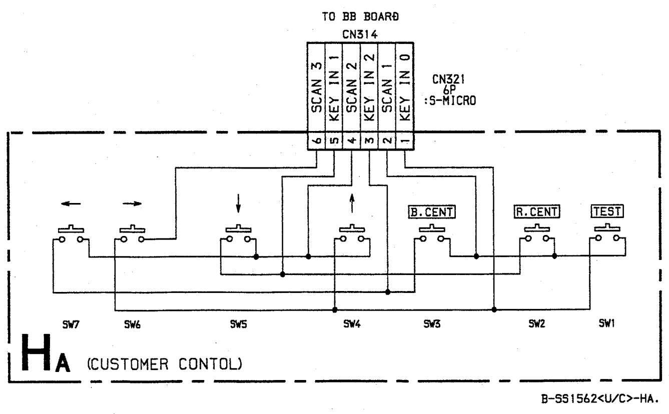
	VPH-1001Q/QM	VPH-1044Q/QM
SW9	–	RGB

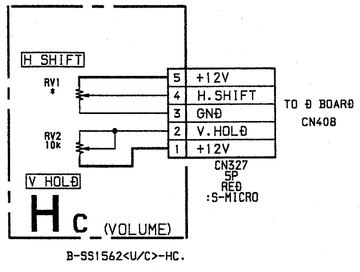
HC BOARD ＊MARK

	VPH-1001Q/QM	VPH-1044Q/QM
RV1	–	20K


(US/CND MODEL)
FB
(FUSE)
FB-1
2P
1
2
F1
5A
125V
S901
AC POWER
L
GND
N
AC-IN
120V 50/60Hz (US/CND)
220-240V 50/60Hz (AEP)
AC-IN (L)
NC
AC-IN (N)
1
2
3
FA-1
3P
WHT
R1
2.2M
1/2W
:RC
T1
LINE
FILTER
L2
550μH
L1
550μH
C1
0.22
250V
:MPS
C2
0.22 250V :MPS
C3
0.22 250V :MPS
R2
1.5
20W
:RB
VDR1
T2
POWER
C4
4700p
400V
F
D1
S3WB60Z
C5
4700p
400V
F
C8
820
200V
C9
820
200V
R3
220k
1/2W
R4
220k
1/2W
T3
L·F·T
C6
2200p
400V
F
C7
2200p
400V
F
SW1
240V
120V
C10
4700p
F
C11
4700p
F
C12
330
R5
100
D2
S1VB20
D3
EQB01-33
FA-3
3P
WHT
:S-MICRO
28V
NC
GND
TO QA BOARD
CN118
FA-2
3P
:MINI
DC+
NC
DC-
FA-4
2P
:MINI
GND
GND
FA
(AC RECT)
B-SS1562<U/C>-FA.
TK-15
(SWITCHING REGULATOR)
+12V
-15V
GND
+15V
GND
+115V
6
5
4
3
2
1
DC+
DC-
B-SS1562<U/C>-TK-15

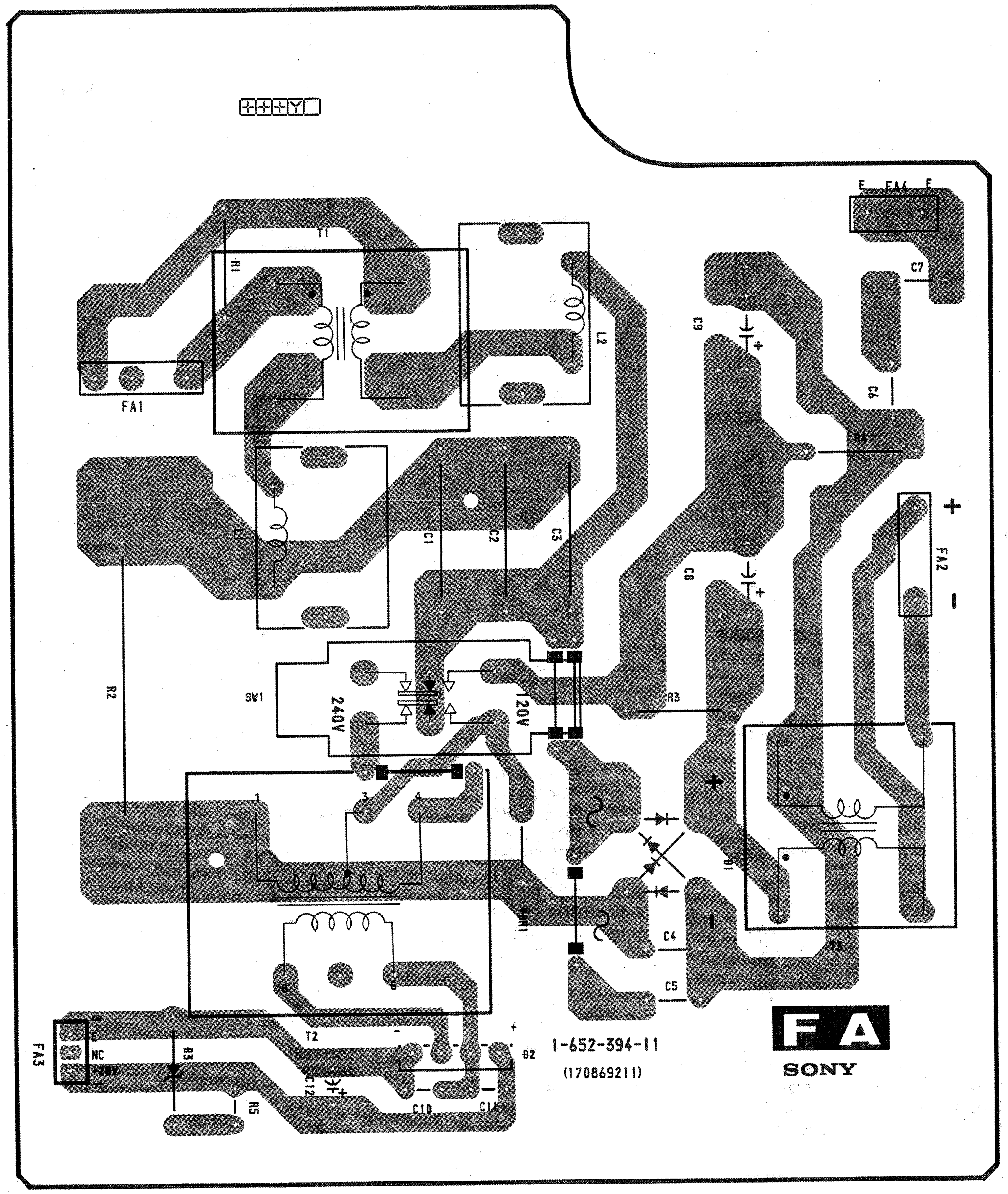

TO BB BOARD
CN309
SCAN 2
KEY IN 4
SCAN 1
KEY IN 3
KEY IN 2
KEY IN 1
KEY IN 0
SCAN 0
8
7
6
5
4
3
2
1
CN322
8P
RED
:S-MICRO
RESET
M SEL
PAGE
VOL-
VOL+
VIDEO
S VIDEO
RGB
POWER
SW16
SW15
SW14
SW13
SW12
SW11
SW10
SW9
＊
SW8
HB (CUSTOMER CONTOL)
B-SS1562<U/C>-HB.


TO BB BOARD
CN314
SCAN 3
KEY IN 1
SCAN 2
KEY IN 2
SCAN 1
KEY IN 0
6
5
4
3
2
1
CN321
6P
:S-MICRO
←
→
↓
↑
B.CENT
R.CENT
TEST
SW7
SW6
SW5
SW4
SW3
SW2
SW1
HA (CUSTOMER CONTOL)
B-SS1562<U/C>-HA.

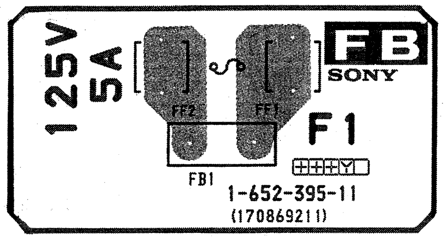

H SHIFT
RV1
＊
RV2
10k
V HOLD
5
4
3
2
1
+12V
H.SHIFT
GND
V.HOLD
+12V
TO D BOARD
CN408
CN327
5P
RED
:S-MICRO
HC (VOLUME)
B-SS1562<U/C>-HC.

FA [AC RECT] **FB** [FUSE] **FC** [FUSE] **HA** [CUSTOMER CONTROL] **HB** [CUSTOMER CONTROL] **HC** [VOLUME]

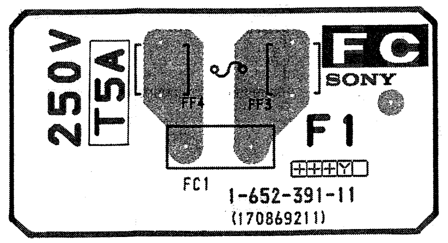
– FA BOARD –


T1
R1
L2
C9
C7
FA4
FA1
L1
C1
C2
C3
C8
R4
FA2
+
–
R2
SW1
240V
120V
R3
VAR1
C4
C5
T2
T3
FA3
NC
+28V
D3
R5
C12
C10
C11
D2
1-652-394-11
(170869211)
FA
SONY

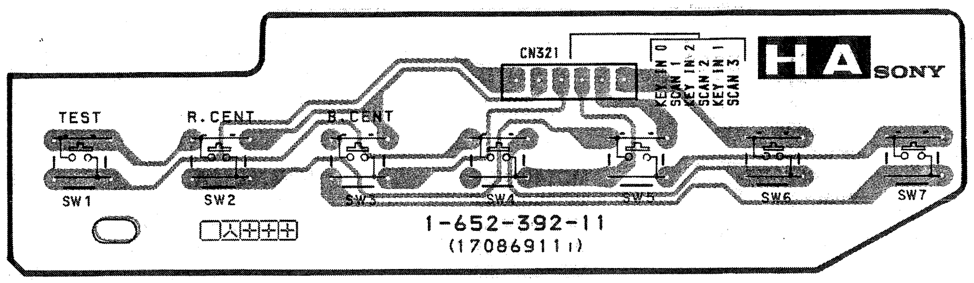
– FB BOARD –


125V
5A
FF2
FF1
FB
SONY
F1
FB1
1-652-395-11
(170869211)

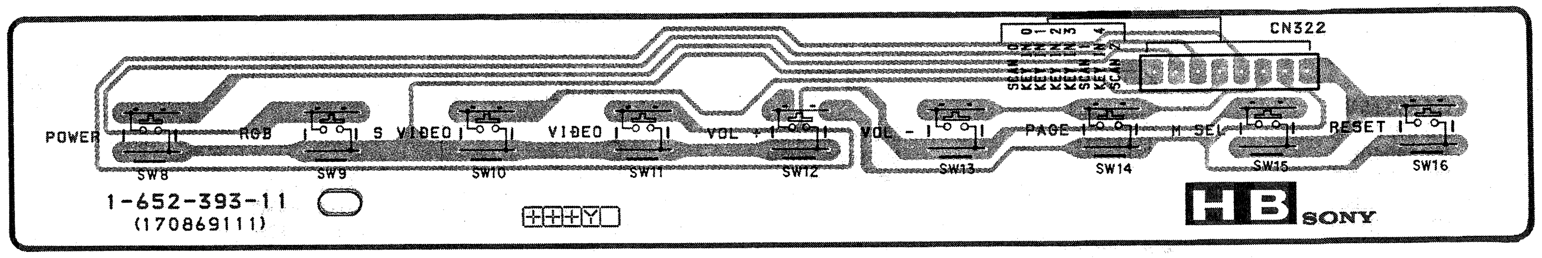
– FC BOARD –


250V
T5A
FF4
FF3
FC
SONY
F1
FC1
1-652-391-11
(170869211)

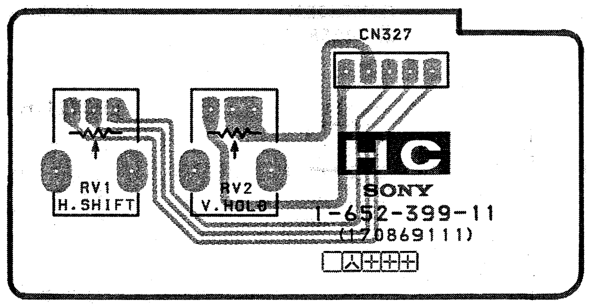
– HA BOARD –


CN321
HA
SONY
TEST
R.CENT
B.CENT
SW1
SW2
SW3
SW4
SW5
SW6
SW7
1-652-392-11
(170869111)

– HB BOARD –

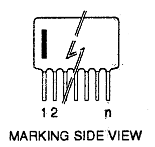

CN322
POWER
RGB
S VIDEO
VIDEO
VOL +
VOL –
PAGE
M SEL
RESET
SW8
SW9
SW10
SW11
SW12
SW13
SW14
SW15
SW16
1-652-393-11
(170869111)
HB
SONY

– HC BOARD –

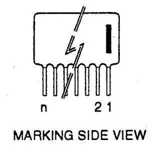

CN327
RV1
H.SHIFT
RV2
V.HOLD
HC
SONY
1-652-399-11
(170869111)

7-5. SEMICONDUCTORS

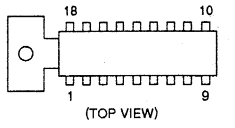
BX-1121


1 2 n
MARKING SIDE VIEW

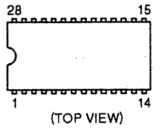
BX-1122


n 2 1
MARKING SIDE VIEW

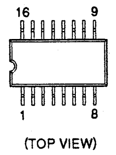
CXA1044BP


18
10
1
9
(TOP VIEW)

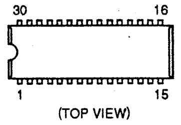
CXA1216P
TDA4555/V1


28
15
1
14
(TOP VIEW)

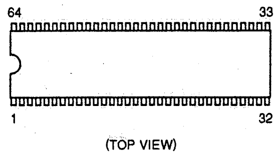
CXA1315M
HD14053BFP
MC14040BF
MC14046BF
MC14053BF
MC74HC4053F


16
9
1
8
(TOP VIEW)

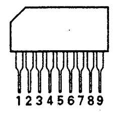
CXA1387S
SBX1765-01


30
16
1
15
(TOP VIEW)

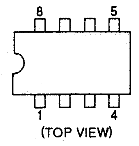
CXP80P424S-1


64
33
1
32
(TOP VIEW)

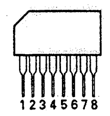
CX894



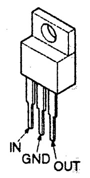
CX7916
RC4558P
TL082ACP
µPC393C
µPC4558C
µPC4570C
X24C02P


8
5
1
4
(TOP VIEW)

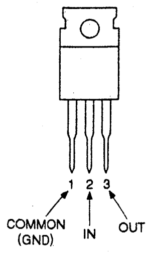
CX7948A
M5218AL



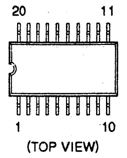
NJM7805FA
NJM7808FA
NJM78M09FA
NJM7809FA
NJM7812FA
RC7808FA
TA7812S



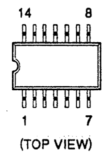
LM7912CT
NJM7912FA
µPC79M12H


1 2 3
COMMON (GND)
IN
OUT

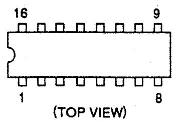
MB88346BPF


20
11
1
10
(TOP VIEW)

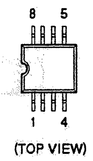
MC14013BF
MC14024BF
MC14066BF
MC14069UBF
MC14071BF
MC14081BF
MC14082BF


14
8
1
7
(TOP VIEW)

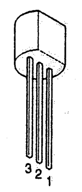
MC14052BCP
MC14053BCP
µPC4053BC


16
9
1
8
(TOP VIEW)

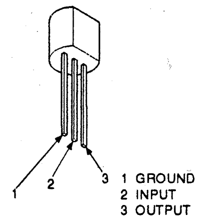
MM1170BF
NJM2228M
µPC4558G2


8
5
1
4
(TOP VIEW)

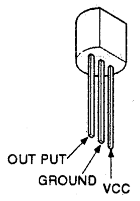
NJM78L05A
NJM78L06A



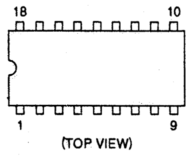
NJM78L08A
NJM79L12A


1
2
3
1 GROUND
2 INPUT
3 OUTPUT

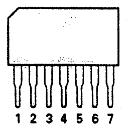
NJM78L12A


OUT PUT
GROUND
VCC

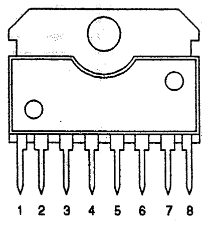
TDA4565


18
10
1
9
(TOP VIEW)

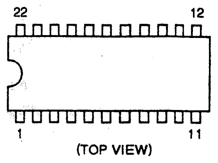
µPC1037HA



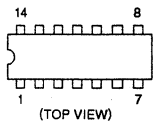
µPC1241H



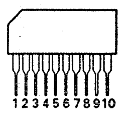
µPC1377C


22
12
1
11
(TOP VIEW)

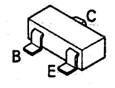
µPC1394C


14
8
1
7
(TOP VIEW)

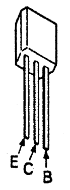
µPC1406HA


1 2 3 4 5 6 7 8 9 10

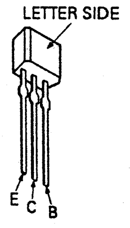
DTA144EK
DTC144EK
2SA1162-G
2SA812-M5M6
2SC1623-L5L6
2SC2712-YG



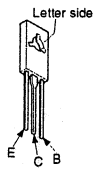
DTC144ES
DTC144WS
2SC1740S-QR



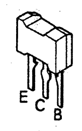
2SA1175-HFE
2SC2785-HFE


LETTER SIDE
E
C
B

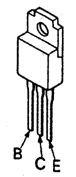
2SA1142-P
2SA1381-D
2SA1381-E
2SA1407-D
2SC2688-LK
2SC3503-DE


Letter side
E
C
B

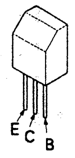
2SA1428-O
2SC3668-O



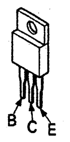
2SA1441-L



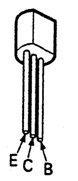
2SB734-34



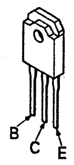
2SB1015-O
2SB1904-LK
2SC3163
2SC3675
2SD1399-CA
2SD1406-YGR
2SD1406-O



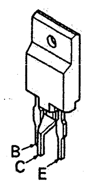
2SA933S-QR
2SC2383-O



2SC2555-2



2SD1887-CA



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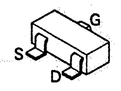
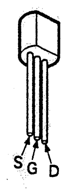
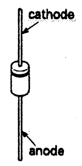


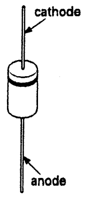
2SK523-L2



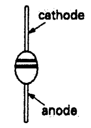
ERC06-15S
EQB01-33
RS3FS
RU-1C


cathode
anode

ERD28-08S


cathode
anode

ERC26-15S
ERC38-06
V06C
V09G
V11N
V19E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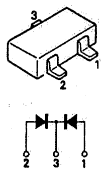
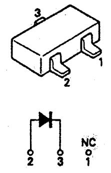
anode

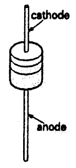
1S2837
1SS184



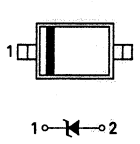
RD3.3M-B2
RD4.3M-B1
RD5.1M-B2
RD5.1M-B3
RD5.6M-B1
RD6.2M-B1
RD6.8M-B2
RD7.5M-B2
RD12M-B1
RD12M-B2



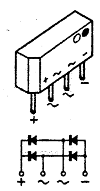
RD5.1ES-B2
RD6.8ES-B3
RD8.2ES-B3
RD13ES-B2
RD15ES-B2
RD33FB1
WG713A
1SS119
1SS133


cathode
anode

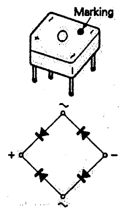
RD5.1SB1-T2



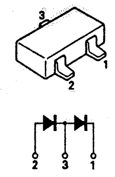
S1VB40



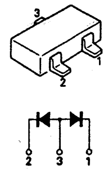
S3WB06Z



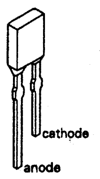
1SS123
1SS226



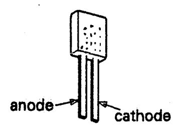
1S2836



LN342GPH


cathode
anode

LN242RPH


anode
cathode

SECTION 8
EXPLODED VIEWS

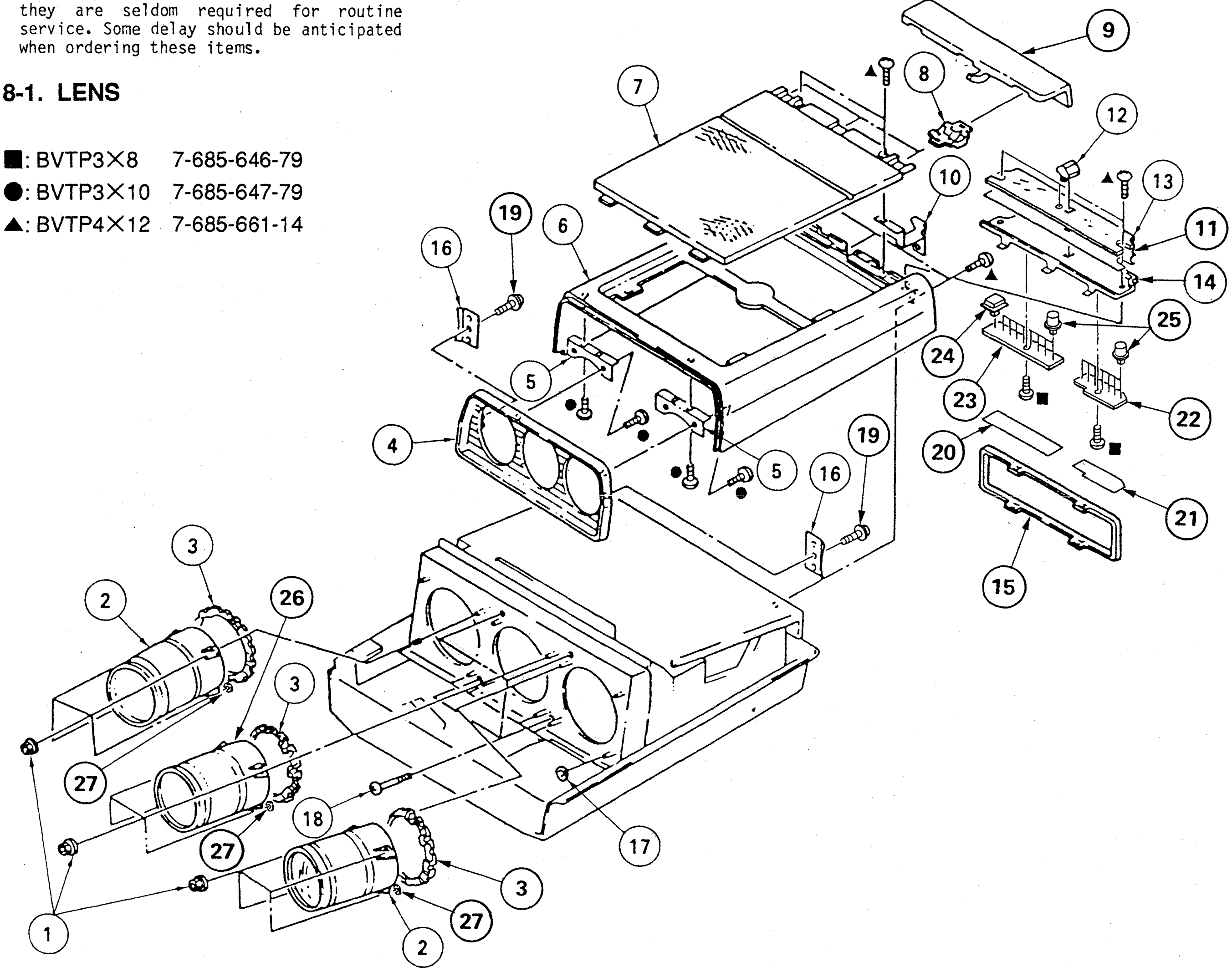
NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " ＊ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

8-1. LENS

■: BVTP3X8 7-685-646-79
●: BVTP3X10 7-685-647-79
▲: BVTP4X12 7-685-661-14



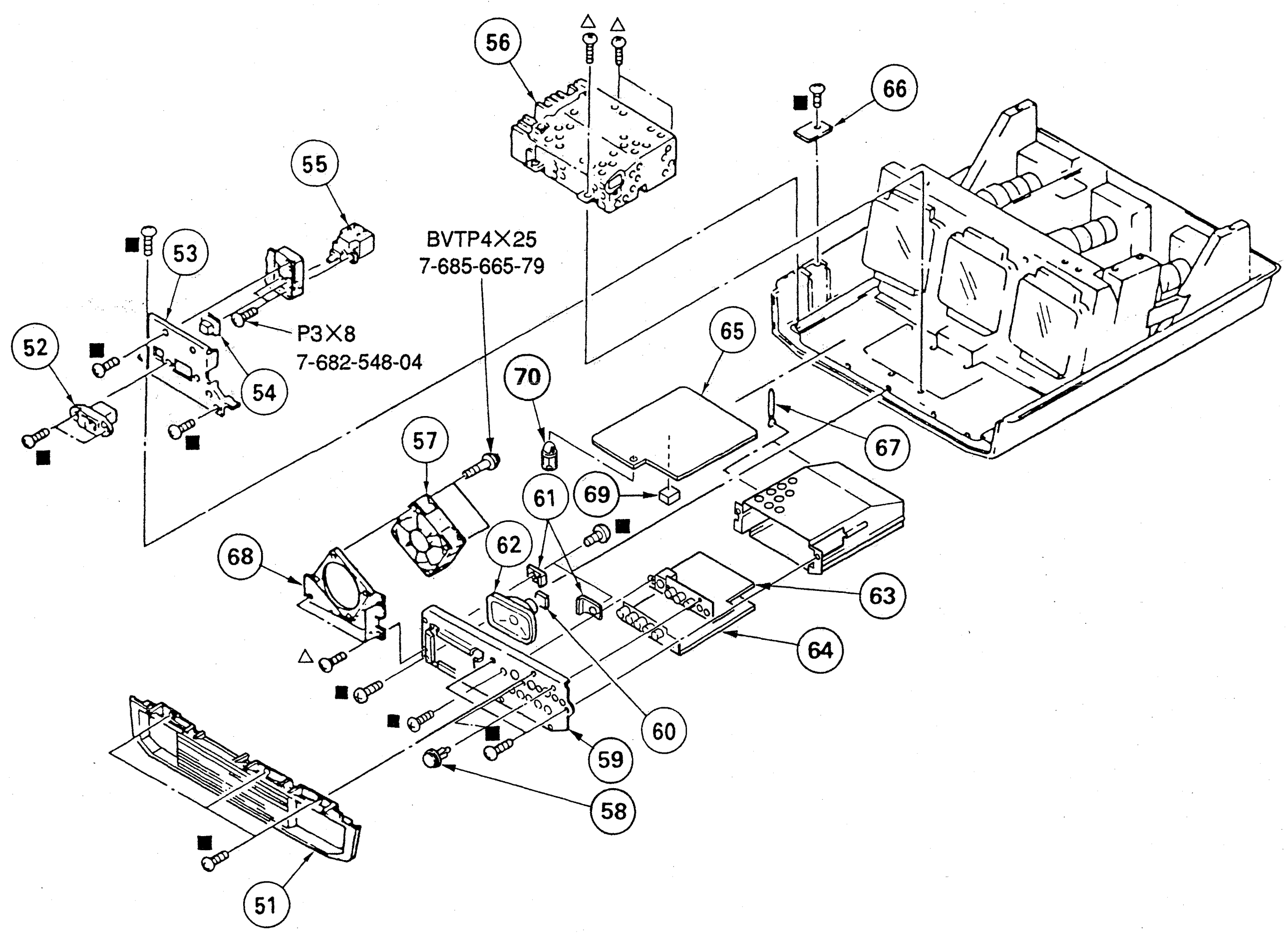
REF.NO.	PART NO.	DESCRIPTION	REMARK
1	4-304-749-00	NUT (M4), FLANGE	
2	4-383-018-03	LENS, DELTA HD6 (VPH-1001Q/1001QM)	
	4-383-089-41	LENS, DELTA HD6 (VPH-1044Q/1044QM)	
3	*4-378-642-01	WASHER, LENS	
4	4-383-064-01	PANEL, LENS	
5	*4-383-021-01	BRACKET, LENS PANEL	
6	4-378-655-51	CABINET	
7	X-4031-914-1	PLATE ASSY, TOP (VPH-1001Q)	8,9
	X-4031-916-1	PLATE ASSY, TOP (VPH-1001QM)	8,9
	X-4032-002-1	PLATE ASSY, TOP (VPH-1044Q)	8,9
	X-4032-004-1	PLATE ASSY, TOP (VPH-1044QM)	8,9
8	3-659-618-00	HINGE, SPRING	
9	X-4029-289-1	DOOR ASSY (VPH-1001Q/1001QM)	
	X-4378-603-1	DOOR ASSY (VPH-1044Q/1044QM)	
10	*4-378-670-01	BRACKET, MESH EARTH	
11	4-044-863-01	SHEET (M), CONTROL (VPH-1001Q/1001QM)	
	4-045-322-01	SHEET (M), CONTROL (VPH-1044Q/1044QM)	
12	4-030-100-01	CAP, LAMP	
13	4-044-862-01	PLATE (M), ORNAMENTAL CONTROL (VPH-1001Q/1001QM)	
	4-045-321-01	PLATE (M), ORNAMENTAL CONTROL (VPH-1044Q/1044QM)	
14	4-040-261-02	PANEL, CONTROL	
15	**4-033-269-21**	**PANEL, REAR (VPH-1001Q)**	
	4-033-269-31	**PANEL, REAR (VPH-1001QM)**	
	4-383-053-01	**PANEL, REAR (VPH-1044Q/1044QM)**	
16	*4-383-038-01	BRACKET (B), LENS PANEL	
17	3-639-647-00	WASHER	
18	4-383-072-01	SCREW (4X45) (G), TAPPING,+ BV	
19	4-029-432-01	SCREW (3X12), (+) BVWHTP	
20	4-040-251-01	SHEET, HB	
21	4-040-250-01	SHEET, HA	
22	*A-1372-017-A	HA BOARD, COMPLETE	
23	*A-1372-018-A	HB BOARD, COMPLETE (VPH-1001Q/1001QM)	
	*A-1372-036-A	HB BOARD, COMPLETE (VPH-1044Q/1044QM)	
24	4-040-246-02	BUTTON, POWER SWITCH	
25	4-040-245-02	BUTTON	
26	4-383-018-03	LENS, DELTA HD6 (VPH-1001Q/1001QM)	
	4-383-089-31	LENS, DELTA HD6 (VPH-1044Q/1044QM)	
27	*3-639-647-01	WASHER	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

8-2. PANEL

■: BVTP3×8 7-685-646-79
△: BVTP4×8 7-685-659-71



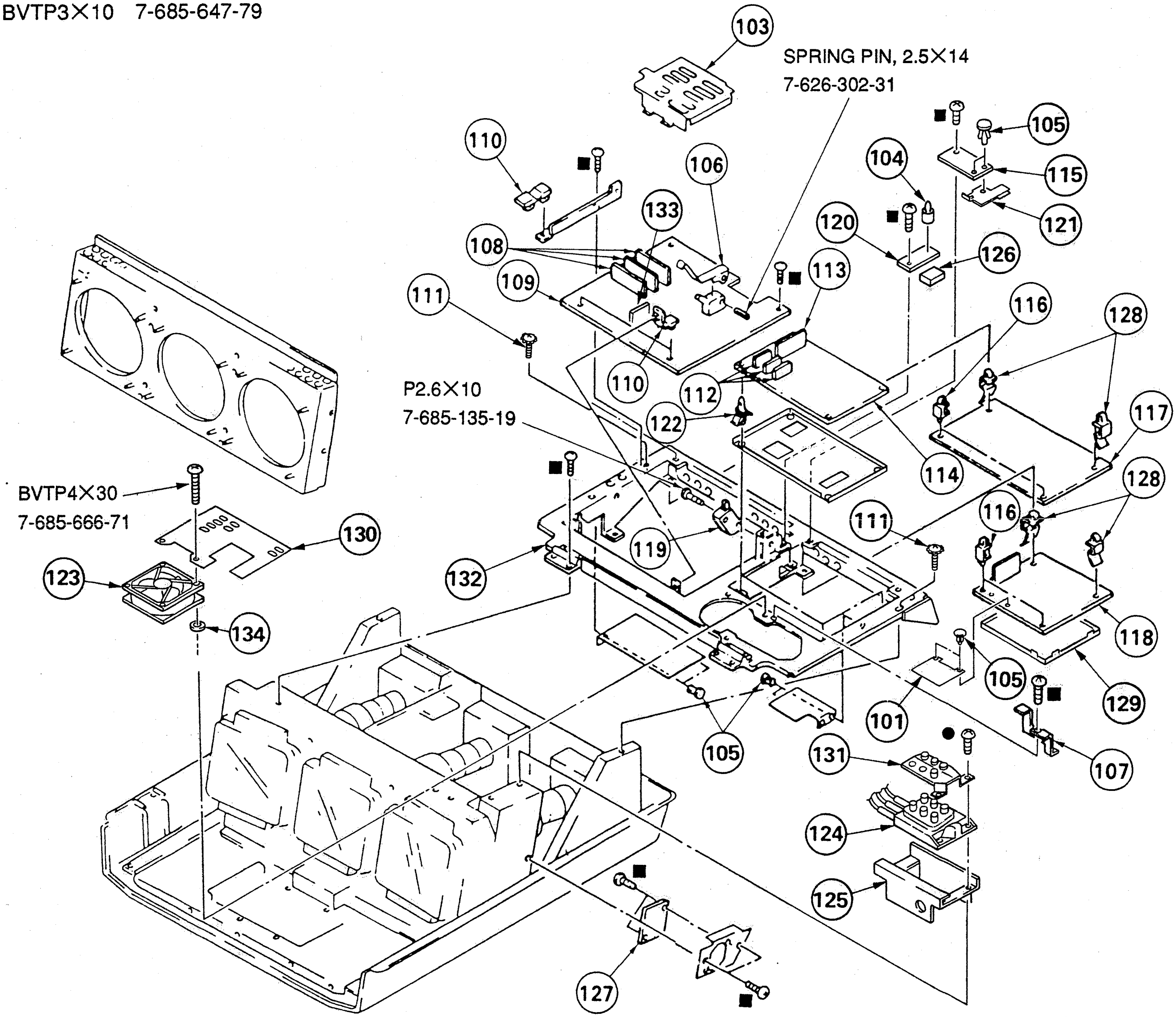
REF.NO.	PART NO.	DESCRIPTION	REMARK
51	4-383-063-01	PANEL, CONNECTOR	
52	⚠ *1-580-375-21	INLET 3P	
53	4-383-049-11	PANEL (F), CONNECTOR	
54	4-362-811-00	BUTTON, MAIN POWER	
55	⚠ 1-570-052-12	SWITCH, PUSH (AC POWER)(1 KEY)	
56	⚠ 1-413-289-11	REGULATOR, SWITCHING (TK-15)	
57	1-698-046-11	FAN, DC	
58	4-374-303-01	RIVET, NYLON	
59	4-044-861-11	CHASSIS (R), FRONT	
60	4-383-088-01	CUSHION, RUBBER	
61	4-383-026-01	SPRING	
62	1-503-255-00	SPEAKER	
63	*A-1270-340-A	QB BOARD, COMPLETE	
64	*A-1270-339-A	QA BOARD, COMPLETE (VPH-1001Q/1001QM)	
	*A-1270-343-A	QA BOARD, COMPLETE (VPH-1044Q)	
	*A-1270-344-A	QA BOARD, COMPLETE (VPH-1044QM)	
65	*A-1241-148-A	FA BOARD, COMPLETE	
66	*A-1241-149-A	FB BOARD, COMPLETE (VPH-1001Q/1044Q)	
	*A-1241-150-A	FC BOARD, COMPLETE (VPH-1001QM/1044QM)	
67	*2-277-426-01	CLAMP	
68	4-383-041-02	HOLDER, FAN	
69	4-040-210-01	CUSHION, FA	
70	*3-687-542-41	SPACER, PC BOARD SPACE	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

8-3. D BOARD

■: BVTP3×8 7-685-646-79
●: BVTP3×10 7-685-647-79


103
SPRING PIN, 2.5×14
7-626-302-31
105
110
106
104
115
133
120
121
108
126
109
113
111
116
128
110
112
P2.6×10
7-685-135-19
122
117
114
128
BVTP4×30
7-685-666-71
130
111
116
123
132
119
118
134
105
129
101
105
131
107
124
125
127

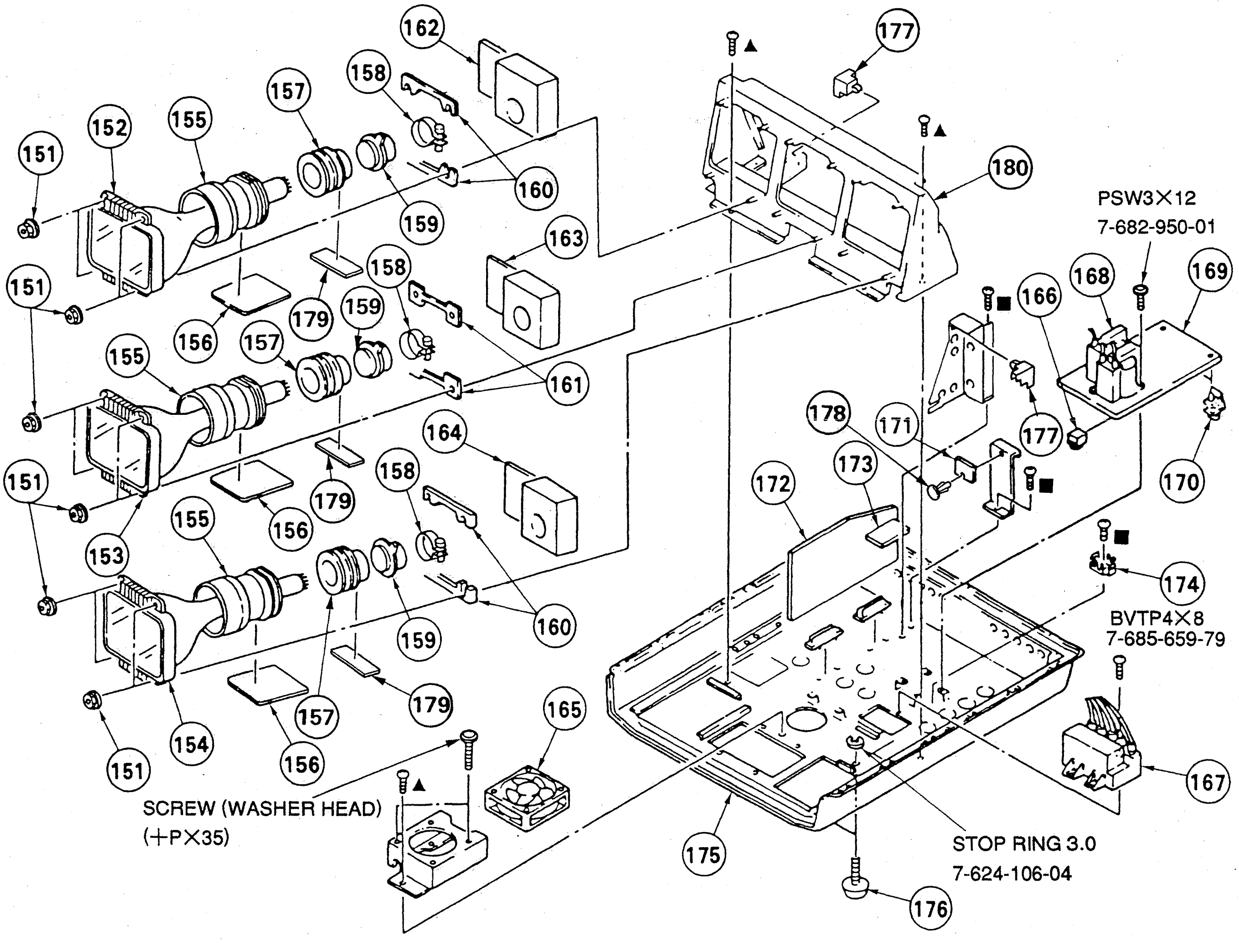
REF.NO.	PART NO.	DESCRIPTION	REMARK
101	*4-040-249-01	DUCT, BA	
103	*4-383-047-01	COVER, REGISTRATION ADJUSTMENT	
104	1-518-590-11	LAMP, PILOT (WITH HOLDER)	
105	4-374-303-01	RIVET, NYLON	
106	*4-378-608-01	ACTUATOR	
107	*4-387-737-02	HOLDER, E PC BOARD	
108	*1-621-059-11	DB BOARD	
109	*A-1341-786-A	D BOARD, COMPLETE	108,133
110	*4-313-732-00	CLIP, HINGE, CIRCUIT BOARD	
111	4-389-025-01	SCREW (M4X8)(EXT TOOTH WASHER)	
112	*1-621-060-11	EC BOARD	
113	*1-621-055-11	EB BOARD	
114	*A-1340-922-A	E BOARD, COMPLETE	112,113
115	*A-1372-019-A	HC BOARD, COMPLETE (VPH-1001Q/1001QM)	
	*A-1372-037-A	HC BOARD, COMPLETE (VPH-1044Q/1044QM)	
116	*4-353-620-02	HINGE, PC BOARD	
117	*A-1131-113-A	BB BOARD, COMPLETE	
118	*A-1135-790-A	BA BOARD, COMPLETE	
119	⚠1-552-437-11	SWITCH, LEVER	
120	*1-621-051-21	X BOARD	
121	*4-040-254-01	BRACKET, HC	
122	*3-703-353-02	SUPPORT, PC BOARD	
123	1-698-046-11	FAN, DC	
124	⚠1-237-582-12	RESISTOR ASSY, HIGH-VOLTAGE	
125	*4-383-037-01	COVER, FOCUS PACK	
126	9-911-840-99	CUSHION	
127	*1-622-694-21	ED BOARD	
128	*4-033-278-01	HOLDER, PCB	
129	*4-040-256-01	CASE(LOWER LID), SHIELD,BA PCB	
130	*4-040-255-01	COVER, E PROTECTION	
131	*4-032-125-01	COVER (B), FOCUS PACK	
132	X-4378-626-6	BRACKET ASSY, PC BOARD	
133	*A-1341-803-A	DA BOARD, COMPLETE	
134	3-723-855-01	SPACER	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

8-4. BASE

■: BVTP3×8 7-685-646-79
▲: BVTP4×12 7-685-661-14


151
152
155
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162
177
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161
164
158
179
156
155
153
160
159
157
179
156
154
151
165
151
151
151
SCREW (WASHER HEAD)
(+P×35)
175
176
STOP RING 3.0
7-624-106-04
PSW3×12
7-682-950-01
168
169
166
177
170
178
171
173
172
174
BVTP4×8
7-685-659-79
167
■
▲

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
151	4-304-749-00	NUT (M4), FLANGE		166	*3-701-903-00	HOLDER, PC BOARD	
152	⚠ 8-736-246-05	PICTURE TUBE 07MS(R)		167	⚠ 1-453-108-11	DC BLOCK, HIGH-VOLTAGE	
153	⚠ 8-736-244-05	PICTURE TUBE 07MS(G)		168	⚠ 1-439-408-31	TRANSFORMER ASSY, FLYBACK (NX-2023)	
154	⚠ 8-736-245-05	PICTURE TUBE 07MS(B)		169	*A-1190-145-A	PC BOARD, COMPLETE	
155	⚠ 1-451-243-00	DEFLECTION YOKE (Y636PA)		170	*3-680-721-00	HOLDER, CHASSIS	
156	*A-1341-784-A	DY1 BOARD, COMPLETE		171	*A-1373-475-A	Y BOARD, COMPLETE	
157	⚠ 1-452-302-11	PICTURE TUBE NECK ASSEMBLY		172	*A-1190-113-A	PA BOARD, COMPLETE	173
158	X-4378-637-1	BAND ASSY		173	*1-621-054-11	PB BOARD	
159	⚠ 1-452-443-13	NECK ASSY, PICTURE TUBE (NA367)		174	*4-309-624-00	TERMINAL, EARTH	
160	4-378-603-01	SPACER (100"), PICTURE TUBE		175	X-4031-993-1	BASE ASSY	176
161	*4-383-025-01	SPACER (G), PICTURE TUBE		176	4-378-622-01	ADJUSTOR	
162	*1-621-068-11	CR BOARD		177	*4-033-277-01	HOLDER, PCB	
163	*1-621-069-11	CG BOARD		178	4-374-303-01	RIVET, NYLON	
164	*1-621-070-11	CB BOARD		179	*A-1341-785-A	DY2 BOARD, COMPLETE	
165	1-541-449-11	FAN, DC (WITH SENSOR)		180	*4-383-066-04	BRACKET, PICTURE TUBE	

SECTION 9
ELECTRICAL PARTS LIST

BB

NOTE:

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS

- All resistors are in ohms
- F : nonflammable

When indicating parts by reference number, please include the board name.

CAPACITORS

- MF : μF, PF : μμF

COILS

- MMH : mH, UH : μH

- The components identified by ⧓ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- ✱ : Selected to yield optimum performance.
- There are some cases the reference number on one board overlaps on the other board. Therefore, when ordering parts by the reference number, please include the board name.

REF.NO.	PART NO.	DESCRIPTION			REMARK
	*A-1131-113-A	BB BOARD, COMPLETE ******************			
		<CAPACITOR>			
C101	1-124-903-11	ELECT	1MF	20%	50V
C102	1-126-101-11	ELECT	100MF	20%	16V
C103	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C104	1-126-233-11	ELECT	22MF	20%	25V
C105	1-126-233-11	ELECT	22MF	20%	25V
C106	1-126-233-11	ELECT	22MF	20%	25V
C107	1-124-903-11	ELECT	1MF	20%	50V
C108	1-124-907-11	ELECT	10MF	20%	50V
C109	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C111	1-126-233-11	ELECT	22MF	20%	25V
C112	1-126-233-11	ELECT	22MF	20%	25V
C113	1-126-233-11	ELECT	22MF	20%	25V
C114	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C115	1-126-101-11	ELECT	100MF	20%	16V
C116	1-126-101-11	ELECT	100MF	20%	16V
C117	1-126-101-11	ELECT	100MF	20%	16V
C118	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C201	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C202	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C203	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C204	1-124-907-11	ELECT	10MF	20%	50V
C205	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C206	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C207	1-124-477-11	ELECT	47MF	20%	16V
C208	1-126-101-11	ELECT	100MF	20%	16V
C209	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C210	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C211	1-124-907-11	ELECT	10MF	20%	50V
C212	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C213	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C214	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C215	1-124-902-00	ELECT	0.47MF	20%	50V
C216	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C217	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C218	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C219	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C220	1-124-907-11	ELECT	10MF	20%	50V
C221	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C222	1-124-903-11	ELECT	1MF	20%	50V
C223	1-124-903-11	ELECT	1MF	20%	50V
C224	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C225	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C226	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C227	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C228	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C229	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C230	1-124-907-11	ELECT	10MF	20%	50V
C231	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C232	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C233	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C234	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C301	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C302	1-126-101-11	ELECT	100MF	20%	16V
C303	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C304	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C305	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C306	1-124-902-00	ELECT	0.47MF	20%	50V
C307	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C308	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C309	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C310	1-124-907-11	ELECT	10MF	20%	50V
C311	1-124-907-11	ELECT	10MF	20%	50V
C312	1-124-120-11	ELECT	220MF	20%	16V
C313	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C314	1-124-902-00	ELECT	0.47MF	20%	50V
C315	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C316	1-124-902-00	ELECT	0.47MF	20%	50V
C317	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C318	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C319	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C320	1-104-792-51	ELECT	33MF	20%	16V
C321	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C322	1-124-903-11	ELECT	1MF	20%	50V
C323	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C324	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C325	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C326	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C327	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C328	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C401	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C402	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C403	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C404	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C405	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C406	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C407	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C408	1-164-489-11	CERAMIC CHIP	0.22MF	10%	16V
C409	1-164-489-11	CERAMIC CHIP	0.22MF	10%	16V
C410	1-164-489-11	CERAMIC CHIP	0.22MF	10%	16V
C411	1-164-489-11	CERAMIC CHIP	0.22MF	10%	16V
C412	1-164-489-11	CERAMIC CHIP	0.22MF	10%	16V
C413	1-104-792-51	ELECT	33MF	20%	16V
C414	1-124-472-11	ELECT	470MF	20%	10V
C415	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C416	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C417	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C418	1-163-229-11	CERAMIC CHIP	12PF	5%	50V

BB

REF.NO.	PART NO.	DESCRIPTION		REMARK
C419	1-163-229-11	CERAMIC CHIP 12PF	5%	50V
C420	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C422	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C423	1-164-489-11	CERAMIC CHIP 0.22MF	10%	16V
C424	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C425	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C426	1-126-101-11	ELECT 100MF	20%	16V
C427	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C428	1-126-101-11	ELECT 100MF	20%	16V
C429	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C430	1-163-025-11	CERAMIC CHIP 0.001MF		50V
C431	**1-164-004-11**	CERAMIC CHIP 0.1MF	**10%**	25V
C432	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C433	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C434	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C435	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V

<CONNECTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
CN301	*1-566-059-11	PIN, CONNECTOR 7P	
CN302	*1-566-056-11	PIN, CONNECTOR 4P	
CN303	*1-566-061-11	PIN, CONNECTOR 9P	
CN304	*1-566-059-11	PIN, CONNECTOR 7P	
CN305	*1-566-060-11	PIN, CONNECTOR 8P	
CN306	*1-566-062-11	PIN, CONNECTOR 10P	
CN307	*1-566-057-11	PIN, CONNECTOR 5P	
CN308	*1-566-056-11	PIN, CONNECTOR 4P	
CN309	*1-566-060-11	PIN, CONNECTOR 8P	
CN310	*1-566-059-11	PIN, CONNECTOR 7P	
CN311	*1-566-057-11	PIN, CONNECTOR 5P	
CN312	*1-566-057-11	PIN, CONNECTOR 5P	
CN313	*1-566-057-11	PIN, CONNECTOR 5P	
CN314	*1-566-058-11	PIN, CONNECTOR 6P	

<DIODE>

REF.NO.	PART NO.	DESCRIPTION	REMARK
D101	8-719-104-34	DIODE 1S2836	
D103	8-719-104-34	DIODE 1S2836	
D104	8-719-104-34	DIODE 1S2836	
D105	8-719-104-34	DIODE 1S2836	
D106	8-719-104-34	DIODE 1S2836	
D107	8-719-104-34	DIODE 1S2836	
D108	8-719-900-95	DIODE V09G	
D109	8-719-900-95	DIODE V09G	
D110	8-719-900-95	DIODE V09G	
D111	8-719-900-95	DIODE V09G	
D201	8-719-104-34	DIODE 1S2836	
D203	8-719-104-34	DIODE 1S2836	
D204	8-719-104-34	DIODE 1S2836	
D205	8-719-104-34	DIODE 1S2836	
D206	8-719-104-34	DIODE 1S2836	
D207	8-719-104-34	DIODE 1S2836	
D208	8-719-104-34	DIODE 1S2836	
D209	8-719-104-34	DIODE 1S2836	
D210	8-719-104-34	DIODE 1S2836	
D211	8-719-104-34	DIODE 1S2836	
D301	8-719-104-34	DIODE 1S2836	
D302	8-719-104-34	DIODE 1S2836	
D303	8-719-104-34	DIODE 1S2836	
D304	8-719-104-34	DIODE 1S2836	
D305	8-719-104-34	DIODE 1S2836	
D306	8-719-104-34	DIODE 1S2836	
D307	8-719-104-34	DIODE 1S2836	
D308	8-719-104-34	DIODE 1S2836	
D309	8-719-105-82	DIODE RD5.1M-B2	
D310	8-719-105-82	DIODE RD5.1M-B2	
D311	8-719-104-34	DIODE 1S2836	
D312	8-719-104-34	DIODE 1S2836	
D313	8-719-104-34	DIODE 1S2836	
D314	8-719-104-34	DIODE 1S2836	
D401	8-719-105-90	DIODE RD5.6M-B1	
D402	8-719-105-90	DIODE RD5.6M-B1	
D403	8-719-105-90	DIODE RD5.6M-B1	
D404	8-719-105-90	DIODE RD5.6M-B1	
D405	8-719-104-34	DIODE 1S2836	
D406	8-719-104-34	DIODE 1S2836	
D407	8-719-104-34	DIODE 1S2836	
D408	8-719-104-34	DIODE 1S2836	
D409	8-719-105-90	DIODE RD5.6M-B1	
D410	8-719-105-90	DIODE RD5.6M-B1	
D411	8-719-105-90	DIODE RD5.6M-B1	
D412	8-719-105-90	DIODE RD5.6M-B1	
D413	8-719-105-90	DIODE RD5.6M-B1	
D414	8-719-105-90	DIODE RD5.6M-B1	
D415	8-719-105-90	DIODE RD5.6M-B1	
D418	8-719-105-90	DIODE RD5.6M-B1	
D419	8-719-159-11	DIODE RD5.1SB1-T2	
D420	8-719-159-11	DIODE RD5.1SB1-T2	
D421	8-719-159-11	DIODE RD5.1SB1-T2	
D422	8-719-106-70	DIODE RD12M-B1	
D423	8-719-105-82	DIODE RD5.1M-B2	
D424	8-719-105-90	DIODE RD5.6M-B1	
D425	8-719-159-11	DIODE RD5.1SB1-T2	
D426	8-719-159-11	DIODE RD5.1SB1-T2	
D427	8-719-159-11	DIODE RD5.1SB1-T2	
D428	8-719-159-11	DIODE RD5.1SB1-T2	
D429	8-719-159-11	DIODE RD5.1SB1-T2	
D430	8-719-104-34	DIODE 1S2836	

<IC>

REF.NO.	PART NO.	DESCRIPTION	REMARK
IC101	8-759-701-79	IC NJM7812FA	
IC102	8-759-300-71	IC HD14053BFP	
IC103	8-759-011-65	IC MC74HC4053F	
IC104	8-759-008-67	IC MC14066BF	
IC105	8-759-701-59	IC NJM78M09FA	
IC106	8-759-708-05	IC NJM78L05A	
IC107	8-759-701-88	IC NJM7912FA	
IC201	8-759-009-10	IC MC14069UBF	
IC202	8-759-009-02	IC MC14046BF	
IC203	8-759-008-92	IC MC14024BF	
IC204	8-759-009-02	IC MC14046BF	
IC205	8-759-008-98	IC MC14040BF	
IC206	8-759-009-12	IC MC14071BF	
IC207	8-759-008-82	IC MC14013BF	
IC208	8-759-009-19	IC MC14081BF	
IC209	8-759-009-20	IC MC14082BF	
IC210	8-759-008-82	IC MC14013BF	
IC211	8-759-300-71	IC HD14053BFP	
IC301	8-752-039-40	IC CXA1044BP	
IC302	8-759-100-96	IC UPC4558G2	
IC303	8-759-100-96	IC UPC4558G2	
IC304	8-759-100-96	IC UPC4558G2	
IC305	8-759-100-96	IC UPC4558G2	
IC401	8-759-100-96	IC UPC4558G2	
IC402	8-759-100-96	IC UPC4558G2	
IC403	8-752-058-68	IC CXA1315M	

BB

REF.NO.	PART NO.	DESCRIPTION	REMARK
IC404	8-759-080-28	IC MM1170BF	
IC405	**8-752-857-46**	**IC CXP80P424S-1-026**	
	*1-526-950-11	SOCKET, IC 64P; IC405	
IC406	8-752-058-68	IC CXA1315M	
IC407	8-759-720-98	IC X24C02P	
IC409	8-759-076-03	IC MB88346BPF	
IC410	8-759-708-05	IC NJM78L05A	

<COIL>

REF.NO.	PART NO.	DESCRIPTION	REMARK
L101	1-459-155-00	COIL (WITH CORE) 45UH	
L201	1-410-494-11	INDUCTOR 1MMH	
L202	1-408-421-00	INDUCTOR 100UH	
L203	1-410-494-11	INDUCTOR 1MMH	
L401	1-408-417-00	INDUCTOR 47UH	
L402	1-408-409-00	INDUCTOR 10UH	

<TRANSISTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q101	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q102	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q103	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q104	8-729-216-22	TRANSISTOR 2SA1162-G	
Q105	8-729-216-22	TRANSISTOR 2SA1162-G	
Q106	8-729-216-22	TRANSISTOR 2SA1162-G	
Q107	8-729-901-01	TRANSISTOR DTC144EK	
Q108	8-729-901-01	TRANSISTOR DTC144EK	
Q109	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q110	8-729-216-22	TRANSISTOR 2SA1162-G	
Q111	8-729-216-22	TRANSISTOR 2SA1162-G	
Q112	8-729-216-22	TRANSISTOR 2SA1162-G	
Q113	8-729-901-01	TRANSISTOR DTC144EK	
Q114	8-729-901-01	TRANSISTOR DTC144EK	
Q115	8-729-901-01	TRANSISTOR DTC144EK	
Q116	8-729-901-01	TRANSISTOR DTC144EK	
Q117	8-729-901-01	TRANSISTOR DTC144EK	
Q118	8-729-216-22	TRANSISTOR 2SA1162-G	
Q119	8-729-216-22	TRANSISTOR 2SA1162-G	
Q120	8-729-216-22	TRANSISTOR 2SA1162-G	
Q121	8-729-216-22	TRANSISTOR 2SA1162-G	
Q201	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q202	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q204	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q205	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q206	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q207	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q208	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q209	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q210	8-729-901-01	TRANSISTOR DTC144EK	
Q211	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q301	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q302	8-729-216-22	TRANSISTOR 2SA1162-G	
Q303	8-729-901-01	TRANSISTOR DTC144EK	
Q304	8-729-901-01	TRANSISTOR DTC144EK	
Q305	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q306	8-729-216-22	TRANSISTOR 2SA1162-G	
Q307	8-729-901-01	TRANSISTOR DTC144EK	
Q308	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q309	8-729-216-22	TRANSISTOR 2SA1162-G	
Q310	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q311	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q312	8-729-216-22	TRANSISTOR 2SA1162-G	
Q313	8-729-216-22	TRANSISTOR 2SA1162-G	
Q315	8-729-901-06	TRANSISTOR DTA144EK	
Q316	8-729-901-06	TRANSISTOR DTA144EK	
Q317	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q318	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q319	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q320	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q321	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q322	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q401	8-729-901-01	TRANSISTOR DTC144EK	
Q402	8-729-901-01	TRANSISTOR DTC144EK	
Q403	8-729-901-01	TRANSISTOR DTC144EK	
Q404	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q405	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q406	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q407	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q408	8-729-901-01	TRANSISTOR DTC144EK	
Q409	8-729-901-01	TRANSISTOR DTC144EK	
Q410	8-729-216-22	TRANSISTOR 2SA1162-G	
Q411	8-729-216-22	TRANSISTOR 2SA1162-G	
Q412	8-729-216-22	TRANSISTOR 2SA1162-G	
Q413	8-729-901-01	TRANSISTOR DTC144EK	
Q414	8-729-901-01	TRANSISTOR DTC144EK	
Q415	8-729-230-49	TRANSISTOR 2SC2712-YG	

<RESISTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
R102	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R103	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R104	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R105	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R106	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R107	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R108	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R109	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R110	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R111	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R112	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R113	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R114	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R115	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R116	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R117	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R118	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R119	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R120	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R121	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R122	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R123	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R124	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R125	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R126	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R127	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R128	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R129	1-216-671-11	METAL CHIP 6.8K 0.50% 1/10W	
R130	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
R131	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
R132	1-216-671-11	METAL CHIP 6.8K 0.50% 1/10W	
R133	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R134	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R135	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R136	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R137	1-216-671-11	METAL CHIP 6.8K 0.50% 1/10W	
R138	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
R139	1-216-025-00	METAL GLAZE 100 5% 1/10W	

BB

REF.NO.	PART NO.	DESCRIPTION				REMARK
R140	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R141	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R142	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R143	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R144	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R145	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R146	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R147	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R148	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R149	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R150	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R151	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R152	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R201	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R202	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R203	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R204	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R205	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R206	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R208	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R209	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R210	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R211	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R212	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R213	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R214	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R215	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R216	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R218	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R220	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R221	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R222	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R223	1-216-103-91	METAL GLAZE	180K	5%	1/10W	
R224	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R225	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R226	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R227	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R228	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R229	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R230	1-216-099-00	METAL GLAZE	120K	5%	1/10W	
R231	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R232	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R233	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R234	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R235	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R236	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R237	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R238	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R239	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R240	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R241	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R242	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R243	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R244	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R245	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R246	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R247	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R248	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R249	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R250	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R251	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R252	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R253	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R254	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R255	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R256	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R257	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R258	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R301	1-216-031-00	METAL GLAZE	180	5%	1/10W	
R302	1-216-031-00	METAL GLAZE	180	5%	1/10W	
R303	1-216-031-00	METAL GLAZE	180	5%	1/10W	
R304	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R305	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R306	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R307	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R308	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R309	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R310	**1-216-679-11**	METAL CHIP	**15K**	0.50%	1/10W	
R311	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R312	1-216-017-00	METAL GLAZE	47	5%	1/10W	
R313	1-216-027-00	METAL GLAZE	120	5%	1/10W	
R314	1-216-027-00	METAL GLAZE	120	5%	1/10W	
R315	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R316	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R317	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R318	**1-216-679-11**	METAL CHIP	**15K**	0.50%	1/10W	
R319	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R320	1-216-017-00	METAL GLAZE	47	5%	1/10W	
R321	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R322	1-216-027-00	METAL GLAZE	120	5%	1/10W	
R323	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R324	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R325	**1-216-679-11**	METAL CHIP	**15K**	0.50%	1/10W	
R326	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R327	1-216-017-00	METAL GLAZE	47	5%	1/10W	
R328	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R329	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R330	1-216-027-00	METAL GLAZE	120	5%	1/10W	
R331	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R332	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R333	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R334	**1-216-670-11**	**METAL CHIP**	**6.2K**	**0.5%**	**1/10W**	
R335	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R336	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R337	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R338	1-216-001-00	METAL GLAZE	10	5%	1/10W	
R339	1-216-638-11	METAL CHIP	300	0.50%	1/10W	
R340	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R341	**1-216-627-11**	**METAL CHIP**	**100**	**0.5%**	**1/10W**	
R342	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R343	1-216-107-00	METAL GLAZE	270K	5%	1/10W	
R344	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R345	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R346	1-216-099-00	METAL GLAZE	120K	5%	1/10W	
R347	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R348	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R349	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R350	1-216-689-11	METAL GLAZE	39K	5%	1/10W	
R351	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R352	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R353	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R354	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R355	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R356	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R359	1-216-677-11	METAL CHIP	12K	0.50%	1/10W	
R360	1-216-677-11	METAL CHIP	12K	0.50%	1/10W	
R361	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W	

BB

REF.NO.	PART NO.	DESCRIPTION				REMARK
R362	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R363	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R364	1-216-689-11	METAL CHIP	39K	0.50%	1/10W	
R365	1-216-669-11	METAL CHIP	5.6K	0.50%	1/10W	
R366	1-216-661-11	METAL CHIP	2.7K	0.50%	1/10W	
R367	1-216-699-11	METAL CHIP	100K	0.50%	1/10W	
R368	1-216-691-11	METAL CHIP	47K	0.50%	1/10W	
R369	1-216-699-11	METAL CHIP	100K	0.50%	1/10W	
R370	1-216-699-11	METAL CHIP	100K	0.50%	1/10W	
R371	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R372	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R373	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R374	1-208-812-11	METAL CHIP	18K	0.50%	1/10W	
R375	1-216-669-11	METAL CHIP	5.6K	0.50%	1/10W	
R376	1-216-675-11	METAL CHIP	10K	0.50%	1/10W	
R377	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R378	1-216-661-11	METAL CHIP	2.7K	0.50%	1/10W	
R379	1-216-673-11	METAL CHIP	8.2K	0.50%	1/10W	
R380	1-216-673-11	METAL CHIP	8.2K	0.50%	1/10W	
R381	1-216-673-11	METAL CHIP	8.2K	0.50%	1/10W	
R382	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R383	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R384	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R385	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R386	1-216-111-00	METAL GLAZE	390K	5%	1/10W	
R387	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R388	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R389	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R390	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R391	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R392	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R393	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R394	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R395	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R396	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R397	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R398	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R401	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R402	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R403	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R404	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R407	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R410	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R411	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R412	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R413	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R414	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R415	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R416	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R417	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R418	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R421	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R423	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R425	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R426	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R427	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R428	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R429	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R430	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R431	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R432	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R433	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R434	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R435	1-216-049-00	METAL GLAZE	1K	5%	1/10W	

REF.NO.	PART NO.	DESCRIPTION				REMARK
R436	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R437	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R438	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R439	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R440	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R441	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R442	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R443	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R444	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R445	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R446	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R447	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R452	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R453	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R454	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R455	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R456	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R458	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R459	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R460	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R461	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R462	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R463	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R464	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R465	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R466	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R467	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R468	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R469	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R470	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R471	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R472	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R473	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R474	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R475	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R476	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R477	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R478	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R479	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R480	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R481	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R482	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R483	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R484	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R485	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R486	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R487	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R488	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R489	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R490	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R491	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R495	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R496	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R497	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R498	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R499	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R500	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R501	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R502	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R504	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R505	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R506	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R515	1-216-073-00	METAL GLAZE	10K	5%	1/10W	

BB **BA**

REF.NO.	PART NO.	DESCRIPTION				REMARK
R516	1-216-665-11	METAL CHIP	3.9K	0.50%	1/10W	
R517	1-216-658-11	METAL CHIP	2K	0.50%	1/10W	
R518	1-216-665-11	METAL CHIP	3.9K	0.50%	1/10W	
R519	1-216-658-11	METAL CHIP	2K	0.50%	1/10W	
R520	1-216-665-11	METAL CHIP	3.9K	0.50%	1/10W	
R521	1-216-658-11	METAL CHIP	2K	0.50%	1/10W	
R522	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R524	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R525	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R526	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R527	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R528	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R529	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R530	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R531	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R532	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R533	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R534	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R535	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R537	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R538	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R539	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R540	1-216-033-00	METAL GLAZE	220	5%	1/10W	

<VARIABLE RESISTOR>

RV301	1-241-759-21	RES, ADJ, CERMET	220
RV302	1-241-759-21	RES, ADJ, CERMET	220
RV303	1-241-759-21	RES, ADJ, CERMET	220
RV304	1-241-767-21	RES, ADJ, CARBON	100K

<SWITCH>

SW201	1-570-865-11	SWITCH, SLIDE

<CRYSTAL>

X401	1-579-511-21	VIBRATOR, CRYSTAL

****

*A-1135-790-A BA BOARD, COMPLETE
****

<TRAP MODULE>

BPF1	1-236-366-11	MODULE, TRAP
BPF2	1-236-365-11	MODULE, TRAP

<CAPACITOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
C1	1-124-910-11	ELECT	47MF	20%	50V	
C2	1-124-910-11	ELECT	47MF	20%	50V	
C3	1-124-910-11	ELECT	47MF	20%	50V	
C4	1-164-222-11	CERAMIC CHIP	0.22MF		25V	
C8	1-124-122-11	ELECT	100MF	20%	50V	
C9	1-124-122-11	ELECT	100MF	20%	50V	
C10	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C11	1-124-907-11	ELECT	10MF	20%	50V	
C12	1-124-910-11	ELECT	47MF	20%	50V	
C13	1-124-910-11	ELECT	47MF	20%	50V	
C14	1-124-910-11	ELECT	47MF	20%	50V	
C15	1-124-910-11	ELECT	47MF	20%	50V	
C16	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C17	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C18	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C19	1-124-916-11	ELECT	22MF	20%	50V	
C20	1-124-910-11	ELECT	47MF	20%	50V	
C21	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C22	1-124-910-11	ELECT	47MF	20%	50V	
C23	1-124-910-11	ELECT	47MF	20%	50V	
C24	1-163-031-11	CERAMIC CHIP	0.01MF		50V	
C25	1-124-907-11	ELECT	10MF	20%	50V	
C28	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C29	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C30	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C31	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C32	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C33	1-124-907-11	ELECT	10MF	20%	50V	
C34	1-163-109-00	CERAMIC CHIP	47PF	5%	50V	
C35	1-163-093-00	CERAMIC CHIP	10PF	5%	50V	
C36	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C37	1-124-903-11	ELECT	1MF	20%	50V	
C38	1-124-907-11	ELECT	10MF	20%	50V	
C39	1-163-115-00	CERAMIC CHIP	82PF	5%	50V	
C40	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C41	1-163-031-11	CERAMIC CHIP	0.01MF		50V	
C42	1-163-237-11	CERAMIC CHIP	27PF	5%	50V	
C43	1-124-907-11	ELECT	10MF	20%	50V	
C44	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C45	1-163-245-11	CERAMIC CHIP	56PF	5%	50V	
C46	1-124-119-00	ELECT	330MF	20%	16V	
C47	1-124-119-00	ELECT	330MF	20%	16V	
C48	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C49	1-136-153-00	FILM	0.01MF	5%	50V	
C50	1-163-033-00	CERAMIC CHIP	0.022MF		50V	
C51	1-163-031-11	CERAMIC CHIP	0.01MF		50V	
C52	1-163-119-00	CERAMIC CHIP	120PF	5%	50V	
C53	1-163-241-11	CERAMIC CHIP	39PF	5%	50V	
C54	1-163-099-00	CERAMIC CHIP	18PF	5%	50V	
C55	1-163-125-00	CERAMIC CHIP	220PF	5%	50V	
C56	1-163-099-00	CERAMIC CHIP	18PF	5%	50V	
C57	1-163-119-00	CERAMIC CHIP	120PF	5%	50V	
C58	1-163-113-00	CERAMIC CHIP	68PF	5%	50V	
C59	1-163-125-00	CERAMIC CHIP	220PF	5%	50V	
C60	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C61	1-124-916-11	ELECT	22MF	20%	50V	
C62	1-124-916-11	ELECT	22MF	20%	50V	
C63	1-124-122-11	ELECT	100MF	20%	50V	
C64	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C65	1-124-907-11	ELECT	10MF	20%	50V	
C67	1-163-109-00	CERAMIC CHIP	47PF	5%	50V	
C68	1-163-109-00	CERAMIC CHIP	47PF	5%	50V	
C69	1-163-119-00	CERAMIC CHIP	120PF	5%	50V	
C70	1-163-133-00	CERAMIC CHIP	470PF	5%	50V	
C71	1-163-133-00	CERAMIC CHIP	470PF	5%	50V	
C72	1-124-927-11	ELECT	4.7MF	20%	50V	
C73	1-124-903-11	ELECT	1MF	20%	50V	
C74	1-136-171-00	FILM	0.33MF	5%	50V	
C75	1-130-479-00	MYLAR	0.0047MF	5%	50V	
C76	1-136-157-00	FILM	0.022MF	5%	50V	
C77	1-136-157-00	FILM	0.022MF	5%	50V	
C78	1-163-119-00	CERAMIC CHIP	120PF	5%	50V	
C79	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C81	1-124-927-11	ELECT	4.7MF	20%	50V	
C82	1-126-320-11	ELECT	10MF	20%	16V	
C83	1-124-907-11	ELECT	10MF	20%	50V	
C84	1-124-910-11	ELECT	47MF	20%	50V	

REF.NO.	PART NO.	DESCRIPTION				REMARK
C85	1-124-907-11	ELECT	10MF	20%	50V	
C86	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C88	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C89	1-164-161-11	CERAMIC CHIP	0.0022MF		50V	
C91	1-163-245-11	CERAMIC CHIP	56PF	5%	50V	
C104	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C106	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V	
C201	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C202	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C203	1-136-157-00	FILM	0.022MF	5%	50V	
C205	1-163-109-00	CERAMIC CHIP	47PF	5%	50V	
C207	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V	
C208	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C211	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C212	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V	
C213	1-124-122-11	ELECT	100MF	20%	50V	
C214	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C215	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C216	1-124-122-11	ELECT	100MF	20%	50V	
C217	1-124-122-11	ELECT	100MF	20%	50V	
C218	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C219	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C220	1-124-122-11	ELECT	100MF	20%	50V	
C221	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C222	1-124-122-11	ELECT	100MF	20%	50V	
C223	1-124-122-11	ELECT	100MF	20%	50V	
C224	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C229	1-124-907-11	ELECT	10MF	20%	50V	
C230	1-124-122-11	ELECT	100MF	20%	50V	
C231	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C234	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C235	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C236	1-124-907-11	ELECT	10MF	20%	50V	
C237	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C238	1-124-907-11	ELECT	10MF	20%	50V	
C239	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C240	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C241	1-124-927-11	ELECT	4.7MF	20%	50V	
C242	1-124-907-11	ELECT	10MF	20%	50V	
C243	1-124-907-11	ELECT	10MF	20%	50V	
C244	1-126-233-11	ELECT	22MF	20%	16V	
C301	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V	
C302	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C303	1-124-916-11	ELECT	22MF	20%	50V	
C304	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V	
C305	1-124-916-11	ELECT	22MF	20%	50V	
C307	1-136-169-00	FILM	0.22MF	5%	50V	
C308	1-124-902-00	ELECT	0.47MF	20%	50V	
C309	1-124-902-00	ELECT	0.47MF	20%	50V	
C310	1-124-902-00	ELECT	0.47MF	20%	50V	
C311	1-124-916-11	ELECT	22MF	20%	50V	
C312	1-124-910-11	ELECT	47MF	20%	50V	
C313	1-124-910-11	ELECT	47MF	20%	50V	
C316	1-136-173-00	FILM	0.47MF	5%	50V	
C317	1-126-101-11	ELECT	100MF	20%	16V	
C318	1-126-803-11	ELECT	47MF	20%	16V	
C319	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C321	1-126-804-11	ELECT	100MF	20%	25V	
C322	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C323	1-124-907-11	ELECT	10MF	20%	50V	
C324	1-126-804-11	ELECT	100MF	20%	25V	
C326	1-124-907-11	ELECT	10MF	20%	50V	
C327	1-124-907-11	ELECT	10MF	20%	50V	
C328	1-124-907-11	ELECT	10MF	20%	50V	
C330	1-163-105-00	CERAMIC CHIP	33PF	5%	50V	
C331	1-136-177-00	FILM	1MF	5%	50V	
C332	1-124-902-00	ELECT	0.47MF	20%	50V	
C333	1-124-907-11	ELECT	10MF	20%	50V	
C334	1-124-910-11	ELECT	47MF	20%	50V	
C335	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C337	1-163-089-00	CERAMIC CHIP	6PF	0.25PF	50V	
C338	1-124-907-11	ELECT	10MF	20%	50V	
C340	1-124-903-11	ELECT	1MF	20%	50V	
C341	1-126-803-11	ELECT	47MF	20%	16V	
C342	1-126-804-11	ELECT	100MF	20%	25V	
C343	1-124-910-11	ELECT	47MF	20%	50V	
C346	1-124-907-11	ELECT	10MF	20%	50V	
C347	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C348	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C349	1-126-803-11	ELECT	47MF	20%	16V	
C351	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C352	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C353	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C354	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C399	1-124-903-11	ELECT	1MF	20%	50V	

<CONNECTOR>

CN201	*1-566-056-11	PIN, CONNECTOR 4P
CN202	*1-566-056-11	PIN, CONNECTOR 4P
CN203	*1-566-061-11	PIN, CONNECTOR 9P
CN204	*1-566-059-11	PIN, CONNECTOR 7P
CN205	*1-566-060-11	PIN, CONNECTOR 8P
CN206	*1-566-057-11	PIN, CONNECTOR 5P

<TRIMMER>

CT101	1-141-181-11	CAP, TRIMMER
CT102	1-141-181-11	CAP, TRIMMER

<DIODE>

D1	8-719-801-78	DIODE 1SS184
D2	8-719-801-78	DIODE 1SS184
D3	8-719-801-78	DIODE 1SS184
D4	8-719-801-78	DIODE 1SS184
D5	8-719-801-78	DIODE 1SS184
D6	8-719-104-34	DIODE 1S2836
D7	8-719-801-78	DIODE 1SS184
D8	8-719-106-71	DIODE RD12M-B2
D9	8-719-801-78	DIODE 1SS184
D10	8-719-801-78	DIODE 1SS184
D12	8-719-801-78	DIODE 1SS184
D13	8-719-801-78	DIODE 1SS184
D14	8-719-801-78	DIODE 1SS184
D101	8-719-105-46	DIODE RD3.3M-B2
D102	8-719-105-82	DIODE RD5.1M-B2
D103	8-719-104-34	DIODE 1S2836
D107	8-719-801-78	DIODE 1SS184
D108	8-719-900-95	DIODE V09G
D110	8-719-105-99	DIODE RD6.2M-B1
D112	8-719-801-78	DIODE 1SS184
D113	8-719-801-78	DIODE 1SS184
D118	8-719-104-34	DIODE 1S2836
D119	8-719-801-78	DIODE 1SS184
D130	8-719-801-78	DIODE 1SS184
D201	8-719-801-78	DIODE 1SS184

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REF.NO.	PART NO.	DESCRIPTION	REMARK
D301	8-719-801-78	DIODE 1SS184	
D303	8-719-801-78	DIODE 1SS184	
D304	8-719-105-63	DIODE RD4.3M-B1	
D305	8-719-106-17	DIODE RD6.8M-B2	
		<DELAY LINE>	
DL101	1-415-122-31	DELAY LINE, 1H (PAL)	
DL102	1-415-632-11	DELAY LINE, Y	
DL103	1-415-502-11	DELAY LINE	
		<FILTER>	
FL1	1-236-164-11	ENCAPSULATED COMPONENT	
FL2	1-239-397-11	FILTER, LOW PASS	
FL3	1-239-397-11	FILTER, LOW PASS	
FL4	1-239-397-11	FILTER, LOW PASS	
		<IC>	
IC1	8-759-300-71	IC HD14053BFP	
IC2	8-759-513-47	IC TDA4555/V1	
IC3	8-759-932-16	IC TDA4565	
IC4	8-759-300-71	IC HD14053BFP	
IC5	8-759-710-42	IC NJM2228M	
IC6	8-759-208-94	IC CX-894	
IC7	8-759-208-94	IC CX-894	
IC8	8-752-034-85	IC CXA1216P	
IC10	8-741-765-01	IC SBX1765-01	
IC11	8-759-979-16	IC CX-7916	
IC12	8-752-037-15	IC CXA1387S	
IC13	8-759-701-59	IC NJM78M09FA	
IC14	8-759-700-69	IC NJM79L12A	
IC15	1-809-576-11	MODULE, H8B7178B	
IC16	8-759-701-79	IC NJM7812FA	
IC17	8-759-701-75	IC NJM7805FA	
		<COIL>	
L101	1-410-470-11	INDUCTOR 10UH	
L103	1-410-466-41	INDUCTOR 4.7UH	
L104	1-408-406-00	INDUCTOR 5.6UH	
L105	1-404-539-11	COIL	
L106	1-404-554-11	COIL	
L107	1-404-554-11	COIL	
L108	1-404-554-11	COIL	
L109	1-408-397-00	INDUCTOR 1UH	
L110	1-410-466-41	INDUCTOR 4.7UH	
L111	1-410-466-41	INDUCTOR 4.7UH	
L112	1-410-466-41	INDUCTOR 4.7UH	
L113	1-459-155-00	COIL (WITH CORE) 45UH	
L114	1-459-155-00	COIL (WITH CORE) 45UH	
L116	1-410-466-41	INDUCTOR 4.7UH	
L120	1-404-584-11	COIL	
L201	1-408-773-31	INDUCTOR CHIP 4.7UH	
		<TRANSISTOR>	
Q1	8-729-901-01	TRANSISTOR DTC144EK	
Q2	8-729-901-01	TRANSISTOR DTC144EK	
Q3	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q4	8-729-901-01	TRANSISTOR DTC144EK	
Q7	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q8	8-729-901-01	TRANSISTOR DTC144EK	
Q9	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q10	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q11	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q12	8-729-216-22	TRANSISTOR 2SA1162-G	
Q13	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q14	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q15	8-729-901-01	TRANSISTOR DTC144EK	
Q16	8-729-901-01	TRANSISTOR DTC144EK	
Q17	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q18	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q19	8-729-216-22	TRANSISTOR 2SA1162-G	
Q20	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q21	8-729-901-01	TRANSISTOR DTC144EK	
Q22	8-729-901-01	TRANSISTOR DTC144EK	
Q23	8-729-901-01	TRANSISTOR DTC144EK	
Q24	8-729-901-01	TRANSISTOR DTC144EK	
Q25	8-729-901-01	TRANSISTOR DTC144EK	
Q26	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q27	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q28	8-729-901-01	TRANSISTOR DTC144EK	
Q29	8-729-216-22	TRANSISTOR 2SA1162-G	
Q30	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q33	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q35	8-729-901-01	TRANSISTOR DTC144EK	
Q36	8-729-216-22	TRANSISTOR 2SA1162-G	
Q37	8-729-901-01	TRANSISTOR DTC144EK	
Q38	8-729-901-01	TRANSISTOR DTC144EK	
Q39	8-729-116-06	TRANSISTOR 2SK160-K6	
Q40	8-729-116-06	TRANSISTOR 2SK160-K6	
Q41	8-729-901-01	TRANSISTOR DTC144EK	
Q42	8-729-901-01	TRANSISTOR DTC144EK	
Q43	8-729-901-01	TRANSISTOR DTC144EK	
Q44	8-729-901-01	TRANSISTOR DTC144EK	
Q45	8-729-901-01	TRANSISTOR DTC144EK	
Q52	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q118	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q119	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q120	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q201	8-729-901-01	TRANSISTOR DTC144EK	
Q202	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q203	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q204	8-729-901-01	TRANSISTOR DTC144EK	
Q205	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q206	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q207	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q208	8-729-901-01	TRANSISTOR DTC144EK	
Q209	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q210	8-729-216-22	TRANSISTOR 2SA1162-G	
Q212	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q213	8-729-216-22	TRANSISTOR 2SA1162-G	
Q301	8-729-901-01	TRANSISTOR DTC144EK	
Q302	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q303	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q304	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q305	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q306	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q307	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q308	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q309	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q310	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q311	8-729-901-01	TRANSISTOR DTC144EK	
Q312	8-729-901-01	TRANSISTOR DTC144EK	
Q313	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q314	8-729-230-49	TRANSISTOR 2SC2712-YG	

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REF.NO.	PART NO.	DESCRIPTION	REMARK
Q315	8-729-901-01	TRANSISTOR DTC144EK	
Q317	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q318	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q321	8-729-901-01	TRANSISTOR DTC144EK	
Q323	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q324	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q325	8-729-901-01	TRANSISTOR DTC144EK	
Q326	8-729-901-01	TRANSISTOR DTC144EK	
Q327	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q328	8-729-216-22	TRANSISTOR 2SA1162-G	
Q329	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q330	8-729-216-22	TRANSISTOR 2SA1162-G	
Q331	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q332	8-729-216-22	TRANSISTOR 2SA1162-G	
Q333	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q336	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q337	8-729-216-22	TRANSISTOR 2SA1162-G	
Q338	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q339	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q340	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q341	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q342	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q343	8-729-901-01	TRANSISTOR DTC144EK	
Q344	8-729-901-01	TRANSISTOR DTC144EK	
Q350	8-729-901-01	TRANSISTOR DTC144EK	
Q360	8-729-901-01	TRANSISTOR DTC144EK	

<RESISTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
JR1	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR2	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R2	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R3	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R4	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R5	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R6	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R7	1-216-683-11	METAL CHIP 22K 0.50% 1/10W	
R8	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R9	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R11	1-216-643-11	METAL CHIP 470 0.50% 1/10W	
R12	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R13	1-216-691-11	METAL CHIP 47K 0.50% 1/10W	
R14	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R15	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R16	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R17	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R20	1-216-645-11	METAL CHIP 560 0.50% 1/10W	
R21	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R25	1-216-643-11	METAL CHIP 470 0.50% 1/10W	
R26	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R27	1-216-635-11	METAL CHIP 220 0.50% 1/10W	
R29	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R30	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R31	1-216-647-11	METAL CHIP 680 0.50% 1/10W	
R32	1-216-647-11	METAL CHIP 680 0.50% 1/10W	
R33	1-216-643-11	METAL CHIP 470 0.50% 1/10W	
R34	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R35	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R38	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R39	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R40	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R41	1-216-667-11	METAL CHIP 4.7K 0.50% 1/10W	
R42	1-216-097-00	METAL GLAZE 100K 5% 1/10W	

REF.NO.	PART NO.	DESCRIPTION	REMARK
R43	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R44	1-216-661-11	METAL CHIP 2.7K 0.50% 1/10W	
R45	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R46	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R48	1-216-652-11	METAL CHIP 1.1K 0.50% 1/10W	
R49	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R50	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R51	1-216-675-11	METAL CHIP 10K 0.50% 1/10W	
R52	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R53	1-216-667-11	METAL CHIP 4.7K 0.50% 1/10W	
R54	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R55	1-216-627-11	METAL CHIP 100 0.50% 1/10W	
R56	1-216-627-11	METAL CHIP 100 0.50% 1/10W	
R57	1-216-627-11	METAL CHIP 100 0.50% 1/10W	
R58	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R59	1-216-667-11	METAL CHIP 4.7K 0.50% 1/10W	
R60	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R61	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R63	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R64	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R65	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R66	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R67	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R68	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R69	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R70	1-216-662-11	METAL CHIP 3K 0.50% 1/10W	
R71	1-216-657-11	METAL CHIP 1.8K 0.50% 1/10W	
R72	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R73	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R74	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R75	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R76	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R80	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R81	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R82	1-216-641-11	METAL CHIP 390 0.50% 1/10W	
R83	1-216-031-00	METAL GLAZE 180 5% 1/10W	
R84	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R85	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R86	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R87	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R88	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R89	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R90	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R91	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R92	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R93	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R94	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R95	1-216-655-11	METAL CHIP 1.5K 0.50% 1/10W	
R104	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R105	1-216-066-00	METAL GLAZE 5.1K 5% 1/10W	
R106	1-216-691-11	METAL CHIP 47K 0.50% 1/10W	
R107	1-216-619-11	METAL CHIP 47 0.50% 1/10W	
R108	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R109	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R110	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R116	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R117	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R118	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R119	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R120	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R121	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R122	1-208-812-11	METAL CHIP 18K 0.50% 1/10W	
R123	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	

BA

REF.NO.	PART NO.	DESCRIPTION	REMARK
R124	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R125	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R126	1-216-650-11	METAL CHIP 910 0.50% 1/10W	
R127	1-216-645-11	METAL CHIP 560 0.50% 1/10W	
R128	1-216-643-11	METAL CHIP 470 0.50% 1/10W	
R129	1-216-635-11	METAL CHIP 220 0.50% 1/10W	
R130	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R131	1-216-665-11	METAL CHIP 3.9K 0.50% 1/10W	
R132	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R133	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R134	1-216-627-11	METAL CHIP 100 0.50% 1/10W	
R135	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R141	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R148	1-216-683-11	METAL CHIP 22K 0.50% 1/10W	
R201	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R202	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R203	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R204	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R205	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R206	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R207	1-216-683-11	METAL CHIP 22K 0.50% 1/10W	
R208	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R209	1-216-013-00	METAL GLAZE 33 5% 1/10W	
R210	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R211	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R212	1-216-683-11	METAL CHIP 22K 0.50% 1/10W	
R213	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R214	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R215	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R216	1-216-013-00	METAL GLAZE 33 5% 1/10W	
R217	1-216-665-11	METAL CHIP 3.9K 0.50% 1/10W	
R218	1-216-627-11	METAL CHIP 100 0.50% 1/10W	
R219	1-216-023-00	METAL GLAZE 82 5% 1/10W	
R220	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R221	1-216-035-00	METAL GLAZE 270 5% 1/10W	
R222	1-216-627-11	METAL CHIP 100 0.50% 1/10W	
R223	1-216-035-00	METAL GLAZE 270 5% 1/10W	
R224	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R225	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R226	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R227	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R228	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R229	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R230	1-216-691-11	METAL CHIP 47K 0.50% 1/10W	
R231	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
R232	1-216-627-11	METAL CHIP 100 0.50% 1/10W	
R233	1-216-641-11	METAL CHIP 390 0.50% 1/10W	
R234	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R235	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R236	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R237	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R238	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R239	1-216-627-11	METAL CHIP 100 0.50% 1/10W	
R240	1-216-627-11	METAL CHIP 100 0.50% 1/10W	
R241	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R242	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R243	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R290	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R301	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R302	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R303	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R304	1-216-119-00	METAL GLAZE 820K 5% 1/10W	
R305	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R306	1-216-691-11	METAL CHIP 47K 0.50% 1/10W	

REF.NO.	PART NO.	DESCRIPTION	REMARK
R307	1-216-109-00	METAL GLAZE 330K 5% 1/10W	
R308	1-216-627-11	METAL CHIP 100 0.50% 1/10W	
R309	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R310	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R311	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R312	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R313	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R314	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R315	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R316	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R317	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R318	1-216-667-11	METAL CHIP 4.7K 0.50% 1/10W	
R319	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R320	1-216-631-11	METAL CHIP 150 0.50% 1/10W	
R321	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R322	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R323	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R324	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R325	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R326	1-216-640-11	METAL CHIP 360 0.50% 1/10W	
R327	1-216-640-11	METAL CHIP 360 0.50% 1/10W	
R328	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R329	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R330	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R331	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R332	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R333	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R334	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R335	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R336	1-216-691-11	METAL CHIP 47K 0.50% 1/10W	
R337	1-216-691-11	METAL CHIP 47K 0.50% 1/10W	
R338	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R339	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R340	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R341	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R342	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R343	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R344	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R345	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R346	1-216-697-91	METAL CHIP 82K 0.50% 1/10W	
R347	1-216-673-11	METAL CHIP 8.2K 0.50% 1/10W	
R348	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R349	1-216-677-11	METAL CHIP 12K 0.50% 1/10W	
R350	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R351	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R352	1-216-691-11	METAL CHIP 47K 0.50% 1/10W	
R353	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R354	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R355	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R356	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R357	1-216-683-11	METAL CHIP 22K 0.50% 1/10W	
R358	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R359	1-216-017-00	METAL GLAZE 47 5% 1/10W	
R360	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R361	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R362	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R364	1-208-812-11	METAL CHIP 18K 0.50% 1/10W	
R365	1-216-453-00	METAL OXIDE 270 5% 2W	F
R366	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R367	1-216-687-11	METAL CHIP 33K 0.50% 1/10W	
R368	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R369	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R370	1-216-627-11	METAL CHIP 100 0.50% 1/10W	

REF.NO.	PART NO.	DESCRIPTION				REMARK
R371	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R372	1-216-627-11	METAL CHIP	100	0.50%	1/10W	
R373	1-216-627-11	METAL CHIP	100	0.50%	1/10W	
R374	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R375	1-216-627-11	METAL CHIP	100	0.50%	1/10W	
R376	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R377	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R378	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R379	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R380	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R381	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R382	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R383	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R384	1-216-631-11	METAL CHIP	150	0.50%	1/10W	
R385	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R386	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R387	1-216-635-11	METAL CHIP	220	0.50%	1/10W	
R388	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R390	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R391	1-216-689-11	METAL GLAZE	39K	5%	1/10W	
R392	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R393	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R394	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W	
R395	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R396	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R397	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R398	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R399	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R401	1-216-017-00	METAL GLAZE	47	5%	1/10W	
R402	1-216-017-00	METAL GLAZE	47	5%	1/10W	
R403	1-216-017-00	METAL GLAZE	47	5%	1/10W	
R404	1-216-453-00	METAL OXIDE	270	5%	2W	F
R406	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R407	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R410	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R411	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W	
R412	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W	
R413	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W	
R414	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R415	1-216-073-00	METAL GLAZE	10K	5%	1/10W	

<VARIABLE RESISTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
RV101	1-241-759-21	RES, ADJ, CARBON 220	
RV102	1-241-763-11	RES, ADJ, CARBON 4.7K	
RV105	1-241-763-11	RES, ADJ, CARBON 4.7K	
RV106	1-241-766-11	RES, ADJ, CERMET 47K	
RV107	1-241-765-11	RES, ADJ, CERMET 22K	
RV108	1-241-766-11	RES, ADJ, CERMET 47K	

<THERMISTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
TH101	1-807-971-11	THERMISTOR	

<CRYSTAL>

REF.NO.	PART NO.	DESCRIPTION	REMARK
X101	1-567-413-11	VIBRATOR, CRYSTAL	
X102	1-527-789-00	VINRATOR, CRYSTAL	

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REF.NO.	PART NO.	DESCRIPTION	REMARK
	*A-1190-113-A	PA BOARD, COMPLETE ***************** (INCLUDING PB BOARD)	
	*4-363-146-00	HEAT SINK, V.OUT	
	4-383-022-01	SPACER, MICA	
	4-383-023-01	SPACER, MICA	

<CAPACITOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
C1	1-123-947-00	ELECT	10MF	20%	160V	
C2	1-123-024-21	ELECT	33MF		160V	
C3	1-136-134-00	FILM	1.5MF	5%	400V	
C4	1-108-700-11	MYLAR	0.047MF	10%	200V	
C5	1-102-030-00	CERAMIC	330PF	10%	500V	
C6	1-124-915-11	ELECT	10MF	20%	25V	
C7	1-104-665-11	ELECT	100MF	20%	16V	
C9	1-124-902-00	ELECT	0.47MF	20%	50V	
C10	1-102-973-00	CERAMIC	100PF	5%	50V	
C11	1-102-244-00	CERAMIC	220PF	10%	500V	
C12	1-108-704-11	MYLAR	0.1MF	10%	200V	
C13	1-124-902-00	ELECT	0.47MF	20%	50V	
C14	1-102-973-00	CERAMIC	100PF	5%	50V	
C15	1-102-244-00	CERAMIC	220PF	10%	500V	
C16	1-108-704-11	MYLAR	0.1MF	10%	200V	
C17	1-124-903-11	ELECT	1MF	20%	50V	
C18	1-124-903-11	ELECT	1MF	20%	50V	
C19	1-162-134-11	CERAMIC	470PF	10%	2KV	
C20	1-126-150-11	ELECT	47MF	20%	350V	
C22	1-108-638-11	MYLAR	0.1MF	10%	100V	
C23	1-124-915-11	ELECT	10MF	20%	25V	
C24	1-124-915-11	ELECT	10MF	20%	25V	
C25	1-104-792-51	ELECT	33MF	20%	16V	
C26	1-126-964-11	ELECT	10MF	20%	16V	
C27	1-126-964-11	ELECT	10MF	20%	16V	
C28	1-104-792-51	ELECT	33MF	20%	16V	
C29	1-104-792-51	ELECT	33MF	20%	16V	
C30	1-136-169-00	FILM	0.22MF	5%	50V	
C31	1-126-964-11	ELECT	10MF	20%	16V	
C32	1-104-792-51	ELECT	33MF	20%	16V	
C33	1-126-964-11	ELECT	10MF	20%	16V	
C34	1-104-665-11	ELECT	100MF	20%	16V	
C36	1-108-692-11	MYLAR	0.01MF	10%	200V	
C37	1-126-964-11	ELECT	10MF	20%	16V	
C39	1-102-824-00	CERAMIC	470PF	5%	50V	
C40	1-108-698-11	MYLAR	0.033MF	10%	200V	
C41	1-108-698-11	MYLAR	0.033MF	10%	200V	
C42	1-124-120-11	ELECT	220MF	20%	16V	
C43	1-124-120-11	ELECT	220MF	20%	16V	
C44	1-126-234-11	ELECT	2200MF	20%	16V	
C45	1-126-234-11	ELECT	2200MF	20%	16V	
C46	1-123-932-00	ELECT	4.7MF	20%	160V	
C47	1-124-927-11	ELECT	4.7MF	20%	25V	
C48	1-124-927-11	ELECT	4.7MF	20%	25V	
C49	1-101-006-00	CERAMIC	0.047MF		50V	
C50	1-101-006-00	CERAMIC	0.047MF		50V	
C51	1-123-024-21	ELECT	33MF		160V	
C52	1-108-704-11	MYLAR	0.1MF	10%	200V	
C53	1-162-134-11	CERAMIC	470PF	10%	2KV	
C54	1-124-798-11	ELECT	1MF	20%	160V	
C55	1-126-541-11	ELECT	330MF	20%	16V	
C56	1-136-165-00	FILM	0.1MF	5%	50V	
C57	1-136-165-00	FILM	0.1MF	5%	50V	
C58	1-124-903-11	ELECT	1MF	20%	50V	

PA

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REF.NO.	PART NO.	DESCRIPTION	REMARK
C59	1-126-174-51	ELECT 10MF 20% 350V	

<DIODE>

REF.NO.	PART NO.	DESCRIPTION	REMARK
D1	8-719-928-08	DIODE ERD28-08S	
D2	8-719-300-80	DIODE RU-1C	
D3	8-719-300-80	DIODE RU-1C	
D4	8-719-300-80	DIODE RU-1C	
D7	8-719-901-19	DIODE V11N	
D8	8-719-971-20	DIODE ERC38-06	
D9	8-719-971-20	DIODE ERC38-06	
D10	8-719-971-20	DIODE ERC38-06	
D11	8-719-971-20	DIODE ERC38-06	
D12	8-719-971-20	DIODE ERC38-06	
D13	8-719-971-20	DIODE ERC38-06	
D14	8-719-312-71	DIODE RS3FS	
D15	8-719-109-85	DIODE RD5.1ESB2	
D16	8-719-109-85	DIODE RD5.1ESB2	
D17	8-719-109-85	DIODE RD5.1ESB2	
D18	8-719-109-85	DIODE RD5.1ESB2	
D20	8-719-911-19	DIODE 1SS119	
D21	8-719-911-19	DIODE 1SS119	
D22	8-719-911-19	DIODE 1SS119	
D23	8-719-911-19	DIODE 1SS119	
D24	8-719-911-19	DIODE 1SS119	
D25	8-719-911-19	DIODE 1SS119	
D26	8-719-911-19	DIODE 1SS119	
D28	8-719-911-19	DIODE 1SS119	
D29	8-719-911-19	DIODE 1SS119	
D30	8-719-911-19	DIODE 1SS119	
D31	8-719-911-19	DIODE 1SS119	
D32	8-719-911-19	DIODE 1SS119	
D33	8-719-110-36	DIODE RD13ESB2	

<IC>

REF.NO.	PART NO.	DESCRIPTION	REMARK
IC1	8-759-503-91	IC TL082ACP	
IC2	8-759-103-93	IC UPC393C	
IC3	8-759-103-93	IC UPC393C	
IC4	8-759-634-50	IC M5218AL	
IC5	8-759-708-12	IC NJM78L12A	

<COIL>

REF.NO.	PART NO.	DESCRIPTION	REMARK
L1	1-459-614-11	COIL, CHOKE 90UH	
L2	1-459-700-11	COIL, CHOKE 2.1MMH	
L3	1-459-155-00	COIL (WITH CORE) 45UH	

<NEON LAMP>

REF.NO.	PART NO.	DESCRIPTION	REMARK
NL2	1-519-108-99	LAMP, NEON	

<CONNECTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
PA1	*1-566-058-11	PIN, CONNECTOR 6P	
PA2	*1-566-062-11	PIN, CONNECTOR 10P	
PA3	*1-508-768-00	PIN, CONNECTOR (5MM PITCH) 6P	
PA4	*1-566-056-11	PIN, CONNECTOR 4P	
PA5	*1-566-057-11	PIN, CONNECTOR 5P	
PA6	*1-566-054-11	PIN, CONNECTOR 2P	
PA7	*1-566-055-11	PIN, CONNECTOR 3P	
PA8	*1-566-059-11	PIN, CONNECTOR 7P	
PA9	*1-566-058-11	PIN, CONNECTOR 6P	
PA10	*1-566-058-11	PIN, CONNECTOR 6P	
PA11	*1-566-058-11	PIN, CONNECTOR 6P	
PA12	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P	
PA13	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P	
PA14	*1-508-766-00	PIN, CONNECTOR (5MM PITCH) 4P	
PA15	*1-566-054-11	PIN, CONNECTOR 2P	

<TRANSISTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q1	8-729-201-62	TRANSISTOR 2SC2555-2	
Q2	8-729-119-80	TRANSISTOR 2SC2688-LK	
Q3	8-729-119-80	TRANSISTOR 2SC2688-LK	
Q4	8-729-119-80	TRANSISTOR 2SC2688-LK	
Q5	8-729-802-71	TRANSISTOR 2SA1407-D	
Q6	8-729-800-80	TRANSISTOR 2SD1399-CA	
Q7	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q9	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q10	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q11	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q12	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q13	8-729-804-48	TRANSISTOR 2SC3675	
Q14	8-729-119-76	TRANSISTOR 2SA1175-HFE	

<RESISTOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
R1	1-216-378-11	METAL OXIDE	5.6	5%	2W	F
R2	1-216-488-11	METAL OXIDE	18K	5%	3W	F
R3	1-249-429-11	CARBON	10K	5%	1/4W	
R4	1-215-921-11	METAL OXIDE	4.7K	5%	3W	F
R5	1-215-921-11	METAL OXIDE	4.7K	5%	3W	F
R6	1-215-924-00	METAL OXIDE	15K	5%	3W	F
R7	1-249-417-11	CARBON	1K	5%	1/4W	
R9	1-249-417-11	CARBON	1K	5%	1/4W	
R10	1-249-423-11	CARBON	3.3K	5%	1/4W	
R11	1-249-420-11	CARBON	1.8K	5%	1/4W	F
R12	1-249-421-11	CARBON	2.2K	5%	1/4W	
R13	1-249-420-11	CARBON	1.8K	5%	1/4W	F
R15	1-249-441-11	CARBON	100K	5%	1/4W	
R16	1-249-441-11	CARBON	100K	5%	1/4W	
R17	1-216-359-00	METAL OXIDE	6.8	5%	1W	F
R18	1-215-443-00	METAL	8.2K	1%	1/4W	
R19	1-215-443-00	METAL	8.2K	1%	1/4W	
R20	1-215-441-00	METAL	6.8K	1%	1/4W	
R21	1-215-441-00	METAL	6.8K	1%	1/4W	
R22	1-214-747-00	METAL	5.6K	1%	1/4W	
⊠R23	⚠.	METAL			1/4W	
R24	1-214-777-00	METAL	100K	1%	1/4W	
R25	1-215-471-00	METAL	120K	1%	1/4W	
R26	1-215-471-00	METAL	120K	1%	1/4W	
R27	1-215-453-00	METAL	22K	1%	1/4W	
R28	1-249-423-11	CARBON	3.3K	5%	1/4W	
R29	1-249-433-11	CARBON	22K	5%	1/4W	
R30	1-249-429-11	CARBON	10K	5%	1/4W	
R31	1-215-469-00	METAL	100K	1%	1/4W	
R32	1-249-423-11	CARBON	3.3K	5%	1/4W	
R33	1-215-429-00	METAL	2.2K	1%	1/4W	
R34	1-215-435-00	METAL	3.9K	1%	1/4W	
R35	1-249-423-11	CARBON	3.3K	5%	1/4W	
R36	1-249-417-11	CARBON	1K	5%	1/4W	
R37	1-247-883-00	CARBON	150K	5%	1/4W	
⊠R38	⚠.	METAL			1/4W	
⊠R39	⚠.	METAL			1/4W	
R40	1-249-433-11	CARBON	22K	5%	1/4W	
R41	1-249-435-11	CARBON	33K	5%	1/4W	
R42	1-249-438-11	CARBON	56K	5%	1/4W	

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PA **PB**

PC

REF.NO.	PART NO.	DESCRIPTION				REMARK
R43	1-249-434-11	CARBON	27K	5%	1/4W	
R44	1-249-429-11	CARBON	10K	5%	1/4W	
R45	1-249-423-11	CARBON	3.3K	5%	1/4W	
R46	1-215-453-00	METAL	22K	1%	1/4W	
R47	1-215-455-00	METAL	27K	1%	1/4W	
⧗R48	⚠.	METAL			1/4W	
⧗R49	⚠.	METAL			1/4W	
R50	1-215-469-00	METAL	100K	1%	1/4W	
R51	1-215-469-00	METAL	100K	1%	1/4W	
R52	1-249-430-11	CARBON	12K	5%	1/4W	
R53	1-249-433-11	CARBON	22K	5%	1/4W	
R54	1-249-433-11	CARBON	22K	5%	1/4W	
R55	1-249-430-11	CARBON	12K	5%	1/4W	
R56	1-249-419-11	CARBON	1.5K	5%	1/4W	
R57	1-249-377-11	CARBON	0.47	5%	1/4W	F
R58	1-214-929-00	CARBON	470K	5%	1/2W	
R59	1-207-621-00	WIREWOUND	1.5	10%	2W	F
R60	1-215-477-00	METAL	220K	1%	1/4W	
R61	1-215-457-00	METAL	33K	1%	1/4W	
R62	1-249-435-11	CARBON	33K	5%	1/4W	
R63	1-247-903-00	CARBON	1M	5%	1/4W	
R64	1-249-439-11	CARBON	68K	5%	1/4W	
R65	1-249-429-11	CARBON	10K	5%	1/4W	
R66	1-247-807-31	CARBON	100	5%	1/4W	
R67	1-215-453-00	METAL	22K	1%	1/4W	
R68	1-249-440-11	CARBON	82K	5%	1/4W	
R69	1-249-429-11	CARBON	10K	5%	1/4W	
R70	1-249-435-11	CARBON	33K	5%	1/4W	
R71	1-249-435-11	CARBON	33K	5%	1/4W	
R72	1-215-921-11	METAL OXIDE	4.7K	5%	3W	F
R73	1-247-881-00	CARBON	120K	5%	1/4W	
R74	1-249-429-11	CARBON	10K	5%	1/4W	
R75	1-202-730-00	SOLID	8.2M	10%	1/2W	
R76	1-216-488-11	METAL OXIDE	18K	5%	3W	F
R77	1-249-417-11	CARBON	1K	5%	1/4W	
R78	1-249-433-11	CARBON	22K	5%	1/4W	F
R79	1-215-483-00	METAL	390K	1%	1/4W	
R80	1-249-423-11	CARBON	3.3K	5%	1/4W	
R81	1-202-830-00	SOLID	10K	5%	1/2W	
R82	1-249-423-11	CARBON	3.3K	5%	1/4W	
R83	1-249-425-11	CARBON	4.7K	5%	1/4W	
R84	1-249-417-11	CARBON	1K	5%	1/4W	
R85	1-215-469-00	METAL	100K	1%	1/4W	
R86	1-215-469-00	METAL	100K	1%	1/4W	
R87	1-215-453-00	METAL	22K	1%	1/4W	
⧗R88	⚠.	METAL			1/4W	
⧗R89	⚠.	METAL			1/4W	
R90	1-249-417-11	CARBON	1K	5%	1/4W	
R91	1-249-429-11	CARBON	10K	5%	1/4W	
R92	1-249-429-11	CARBON	10K	5%	1/4W	

<SPARK GAP>

SG1	1-519-063-99	DISCHARGING GAP

<TRANSFORMER>

T1	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE
T2	1-437-090-00	HDT
T3	⚠.1-437-078-11	TRANSFORMER, HORIZONTAL DRIVE
T4	⚠.1-439-409-11	LOT
T5	⚠.1-413-059-11	TRANSFORMER, FERRITE (DFT)

****

REF.NO. PART NO. DESCRIPTION REMARK

*1-621-054-11 PB BOARD
****

<CAPACITOR>

C1	1-124-257-00	ELECT	2.2MF	20%	50V
C2	1-126-163-11	ELECT	4.7MF	20%	25V
C3	1-136-159-00	FILM	0.033MF	5%	50V
C5	1-102-106-00	CERAMIC	100PF	10%	50V
C6	1-130-475-00	MYLAR	0.0022MF	5%	50V
C7	1-126-157-11	ELECT	10MF	20%	16V
C8	1-136-169-00	FILM	0.22MF	5%	50V
C9	1-130-475-00	MYLAR	0.0022MF	5%	50V

<IC>

IC1	8-759-100-75	IC UPC1394C

<RESISTOR>

R2	1-249-417-11	CARBON	1K	5%	1/4W
R3	1-249-434-11	CARBON	27K	5%	1/4W
R4	1-249-431-11	CARBON	15K	5%	1/4W
R5	1-249-441-11	CARBON	100K	5%	1/4W
R6	1-249-435-11	CARBON	33K	5%	1/4W
R7	1-249-429-11	CARBON	10K	5%	1/4W
R8	1-249-413-11	CARBON	470	5%	1/4W
R9	1-249-428-11	CARBON	8.2K	5%	1/4W
R10	1-249-437-11	CARBON	47K	5%	1/4W
R11	1-249-440-11	CARBON	82K	5%	1/4W
R12	1-249-436-11	CARBON	39K	5%	1/4W
R14	1-249-428-11	CARBON	8.2K	5%	1/4W

<PLUG>

W1	*1-506-602-11	PLUG, L TYPE (2.0MM PITCH) 5P
W2	*1-506-602-11	PLUG, L TYPE (2.0MM PITCH) 5P

****

*A-1190-145-A PC BOARD, COMPLETE
****

4-382-854-11 SCREW (M3X10), P, SW (+)

<CAPACITOR>

C1	⚠.1-130-660-11	FILM	0.02MF	3%	1.6KV
C2	⚠.1-136-134-11	FILM	1.5MF	5%	400V

<DIODE>

D1	8-719-945-80	DIODE ERC06-15S
D2	8-719-945-80	DIODE ERC06-15S

<COIL>

L1	⚠.1-459-700-11	COIL, CHOKE 2.1MMH
L2	⚠.1-459-700-11	COIL, CHOKE 2.1MMH

<NEON LAMP>

NL1	1-519-108-99	LAMP, NEON

PC **FA** **FB** **FC** **QB**

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REF.NO.	PART NO.	DESCRIPTION				REMARK
		<CONNECTOR>				
PC1	*1-508-768-00	PIN, CONNECTOR (5MM PITCH) 6P				
		<TRANSISTOR>				
Q1	8-729-805-07	TRANSISTOR 2SD1887-CA				
		<TRANSFORMER>				
T1	⚠1-439-408-31	TRANSFORMER ASSY, FLYBACK (NX-2023)				
T2	⚠1-439-408-31	TRANSFORMER ASSY, FLYBACK (NX-2023)				
		**				
	*A-1241-148-A	FA BOARD, COMPLETE ******************				
		<CAPACITOR>				
C1	1-130-711-00	FILM	0.22MF	20%	250V	
C2	1-130-711-00	FILM	0.22MF	20%	250V	
C3	1-130-711-00	FILM	0.22MF	20%	250V	
C4	1-162-599-12	CERAMIC	0.0047MF	20%	400V	
C5	1-162-599-12	CERAMIC	0.0047MF	20%	400V	
C6	1-161-742-00	CERAMIC	0.0022MF	20%	400V	
C7	1-161-742-00	CERAMIC	0.0022MF	20%	400V	
C8	1-125-469-11	ELECT(BLOCK)	820MF	20%	200V	
C9	1-125-469-11	ELECT(BLOCK)	820MF	20%	200V	
C10	1-101-003-00	CERAMIC	0.0047MF		50V	
C11	1-101-003-00	CERAMIC	0.0047MF		50V	
C12	1-124-920-11	ELECT	330MF	20%	50V	
		<DIODE>				
D1	8-719-503-06	DIODE S3WB60Z				
D2	8-719-511-40	DIODE S1VB40				
D3	8-719-931-33	DIODE EQB01-33				
		<CONNECTOR>				
FA-1	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P				
FA-2	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P				
FA-3	*1-566-055-11	PIN, CONNECTOR 3P				
FA-4	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P				
		<COIL>				
L1	1-459-595-11	COIL, CHOKE				
L2	1-459-595-11	COIL, CHOKE				
		<RESISTOR>				
R1	1-202-723-00	SOLID	2.2M	10%	1/2W	
R2	⚠1-205-798-11	WIREWOUND	1.5	5%	20W	
R3	1-214-921-00	CARBON	220K	5%	1/2W	
R4	1-214-921-00	CARBON	220K	5%	1/2W	
R5	1-247-807-31	CARBON	100	5%	1/4W	
		<SWITCH>				
SW1	⚠1-570-971-11	SWITCH, SLIDE				
		<TRANSFORMER>				
T1	1-421-944-11	TRANSFORMER, LINE FILTER				
T2	⚠1-448-374-11	TRANSFORMER, POWER				
T3	1-421-776-11	LFT				
		<VARISTOR>				
VDR1	1-806-355-00	VARISTOR AVR-G10D221KAHN				
		**				
	*A-1241-149-A	FB BOARD, COMPLETE (VPH-1001Q/1044Q) ******************				
	*1-533-146-00	HOLDER, FUSE				
		<FUSE>				
F1	⚠1-532-747-11	FUSE, GLASS TUBE (5.0A/125V)				
		<CONNECTOR>				
FB-1	*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P				
		**				
	*A-1241-150-A	FC BOARD, COMPLETE (VPH-1001QM/1044QM) ******************				
	*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P				
	*1-533-146-00	HOLDER, FUSE				
		<FUSE>				
F1	⚠1-532-299-11	FUSE, TIME-LAG (5.0A/250V)				
		**				
	*A-1270-340-A	QB BOARD, COMPLETE ******************				
		<CAPACITOR>				
C201	1-163-005-11	CERAMIC CHIP	470PF	10%	50V	
C202	1-163-005-11	CERAMIC CHIP	470PF	10%	50V	
C203	1-124-903-11	ELECT	1MF	20%	50V	
C204	1-126-103-11	ELECT	470MF	20%	16V	
C205	1-124-907-11	ELECT	10MF	20%	50V	
C206	1-136-165-00	FILM	0.1MF	5%	50V	
C207	1-124-907-11	ELECT	10MF	20%	50V	
C301	1-124-907-11	ELECT	10MF	20%	50V	
C302	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C303	1-124-907-11	ELECT	10MF	20%	50V	
C304	1-124-907-11	ELECT	10MF	20%	50V	
C305	1-124-907-11	ELECT	10MF	20%	50V	
C306	1-124-557-11	ELECT	1000MF	20%	25V	
C307	1-126-101-11	ELECT	100MF	20%	16V	
C308	1-124-927-11	ELECT	4.7MF	20%	50V	
C309	1-124-477-11	ELECT	47MF	20%	16V	
C310	1-124-477-11	ELECT	47MF	20%	16V	
C311	1-126-103-11	ELECT	470MF	20%	16V	
C312	1-126-103-11	ELECT	470MF	20%	16V	
C313	1-136-161-00	FILM	0.047MF	5%	50V	
C315	1-124-120-11	ELECT	220MF	20%	25V	
C316	1-124-907-11	ELECT	10MF	20%	50V	
C317	1-124-907-11	ELECT	10MF	20%	50V	
C318	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V	

<CONNECTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
CN101	*1-566-042-11	PIN, CONNECTOR 3P	
CN103	*1-566-062-11	PIN, CONNECTOR 10P	
CN104	*1-566-043-11	PIN, CONNECTOR 4P	
CN105	*1-566-042-11	PIN, CONNECTOR 3P	
CN106	*1-566-042-11	PIN, CONNECTOR 3P	

<DIODE>

REF.NO.	PART NO.	DESCRIPTION	REMARK
D201	8-719-106-23	DIODE RD7.5M-B2	
D202	8-719-911-19	DIODE 1SS119	
D203	8-719-801-78	DIODE 1SS184	
D204	8-719-800-76	DIODE 1SS226	
D301	8-719-801-78	DIODE 1SS184	
D302	8-719-900-95	DIODE V09G	
D303	8-719-911-19	DIODE 1SS119	

<IC>

REF.NO.	PART NO.	DESCRIPTION	REMARK
IC201	8-759-701-88	IC NJM7912FA	
IC202	8-759-708-06	IC NJM78L06A	
IC301	8-759-145-27	IC UPC1406HA	
IC302	8-759-101-77	IC UPC1241H	
IC303	8-759-701-79	IC NJM7812FA	

<JACK>

REF.NO.	PART NO.	DESCRIPTION	REMARK
J101	1-537-751-11	TERMINAL BOARD ASSY, I/O	
J102	1-566-848-21	CONNECTOR, S TERMINAL 4P	

<TRANSISTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q201	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q202	8-729-901-01	TRANSISTOR DTC144EK	
Q203	8-729-901-01	TRANSISTOR DTC144EK	
Q204	8-729-216-22	TRANSISTOR 2SA1162-G	
Q205	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q206	8-729-901-01	TRANSISTOR DTC144EK	
Q207	8-729-216-22	TRANSISTOR 2SA1162-G	
Q208	8-729-901-01	TRANSISTOR DTC144EK	
Q209	8-729-901-01	TRANSISTOR DTC144EK	
Q210	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q211	8-729-216-22	TRANSISTOR 2SA1162-G	
Q212	8-729-901-01	TRANSISTOR DTC144EK	
Q213	8-729-901-01	TRANSISTOR DTC144EK	
Q214	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q301	8-729-216-22	TRANSISTOR 2SA1162-G	
Q302	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q303	8-729-112-61	TRANSISTOR 2SA1441-L	
Q304	8-729-901-06	TRANSISTOR DTA144EK	
Q305	8-729-901-01	TRANSISTOR DTC144EK	

<RESISTOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
R201	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R202	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R203	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R204	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R205	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R206	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R207	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R208	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R209	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R210	1-216-308-00	METAL GLAZE	4.7	5%	1/10W	
R211	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R212	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R213	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R214	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R216	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R217	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R218	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R219	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R220	1-216-017-00	METAL GLAZE	47	5%	1/10W	
R221	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R222	1-247-804-11	CARBON	75	5%	1/4W	
R223	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R224	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R225	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R226	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R227	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R228	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R229	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R231	1-216-449-11	METAL OXIDE	56	5%	2W	F
R232	1-216-449-11	METAL OXIDE	56	5%	2W	F
R233	1-216-631-11	METAL CHIP	150	0.50%	1/10W	
R234	1-216-631-11	METAL CHIP	150	0.50%	1/10W	
R235	1-216-631-11	METAL CHIP	150	0.50%	1/10W	
R236	1-216-631-11	METAL CHIP	150	0.50%	1/10W	
R301	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R302	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R303	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R304	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R305	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R306	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R307	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R308	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R309	1-249-381-11	CARBON	1	5%	1/4W	F
R310	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R311	1-249-417-11	CARBON	1K	5%	1/4W	F
R312	1-216-025-00	METAL GLAZE	100	5%	1/10W	

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*A-1270-339-A QA BOARD, COMPLETE (VPH-1001Q/1001QM)

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<CAPACITOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
C26	1-126-101-11	ELECT	100MF	20%	16V	
C27	1-124-907-11	ELECT	10MF	20%	50V	
C28	1-163-107-00	CERAMIC CHIP	39PF	5%	50V	
C29	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C30	1-124-907-11	ELECT	10MF	20%	50V	
C31	1-124-907-11	ELECT	10MF	20%	50V	
C32	1-126-103-11	ELECT	470MF	20%	16V	
C33	1-163-101-00	CERAMIC CHIP	22PF	5%	50V	
C34	1-163-097-00	CERAMIC CHIP	15PF	5%	50V	
C35	1-124-477-11	ELECT	47MF	20%	16V	
C36	1-124-907-11	ELECT	10MF	20%	50V	
C37	1-163-031-11	CERAMIC CHIP	0.01MF		50V	
C39	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C40	1-124-907-11	ELECT	10MF	20%	50V	
C41	1-163-031-11	CERAMIC CHIP	0.01MF		50V	
C42	1-163-031-11	CERAMIC CHIP	0.01MF		50V	
C43	1-124-907-11	ELECT	10MF	20%	50V	
C44	1-163-031-11	CERAMIC CHIP	0.01MF		50V	
C45	1-163-243-11	CERAMIC CHIP	47PF	5%	50V	
C46	1-163-249-11	CERAMIC CHIP	82PF	5%	50V	

QA

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Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION				REMARK
C47	1-124-907-11	ELECT	10MF	20%	50V	
C48	1-124-477-11	ELECT	47MF	20%	16V	
C49	1-124-903-11	ELECT	1MF	20%	50V	
C50	1-124-360-00	ELECT	1000MF	20%	16V	
C51	1-124-903-11	ELECT	1MF	20%	50V	
C52	1-124-477-11	ELECT	47MF	20%	16V	
C53	1-136-159-00	FILM	0.033MF	5%	50V	
C54	1-124-907-11	ELECT	10MF	20%	50V	
C55	1-124-907-11	ELECT	10MF	20%	50V	
C56	1-124-477-11	ELECT	47MF	20%	16V	
C57	1-124-120-11	ELECT	220MF	20%	16V	
C58	⚠ 1-124-907-91	ELECT	10MF	20%	50V	

<CONNECTOR>

CN107	*1-566-056-11	PIN, CONNECTOR 4P
CN108	*1-566-062-11	PIN, CONNECTOR 10P
CN109	*1-566-056-11	PIN, CONNECTOR 4P
CN110	*1-566-056-11	PIN, CONNECTOR 4P
CN111	*1-566-061-11	PIN, CONNECTOR 9P
CN112	*1-566-061-11	PIN, CONNECTOR 9P
CN113	*1-566-056-11	PIN, CONNECTOR 4P
CN114	*1-566-059-11	PIN, CONNECTOR 7P
CN115	*1-566-058-11	PIN, CONNECTOR 6P
CN116	*1-566-059-11	PIN, CONNECTOR 7P
CN117	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P
CN118	*1-566-055-11	PIN, CONNECTOR 3P

<DIODE>

D8	8-719-800-76	DIODE 1SS226
D9	8-719-801-78	DIODE 1SS184
D11	8-719-911-19	DIODE 1SS119
D12	8-719-801-78	DIODE 1SS184
D13	8-719-911-19	DIODE 1SS119
D14	8-719-911-19	DIODE 1SS119
D15	8-719-800-76	DIODE 1SS226
D16	8-719-105-83	DIODE RD5.1M-B3
D17	8-719-911-19	DIODE 1SS119
D18	8-719-801-78	DIODE 1SS184
D19	8-719-801-78	DIODE 1SS184
D20	8-719-800-76	DIODE 1SS226

<IC>

IC3	8-759-000-48	IC MC14052BCP
IC6	8-752-037-04	IC CX-7948A
IC7	8-759-708-05	IC NJM78L05A
IC8	8-759-708-08	IC NJM78L08A
IC9	8-759-701-79	IC NJM7812FA
IC10	8-759-701-79	IC NJM7812FA

<TRANSISTOR>

Q10	8-729-901-01	TRANSISTOR DTC144EK
Q11	8-729-216-22	TRANSISTOR 2SA1162-G
Q12	8-729-230-49	TRANSISTOR 2SC2712-YG
Q13	8-729-230-49	TRANSISTOR 2SC2712-YG
Q14	8-729-230-49	TRANSISTOR 2SC2712-YG
Q15	8-729-901-01	TRANSISTOR DTC144EK
Q16	8-729-230-49	TRANSISTOR 2SC2712-YG
Q17	8-729-230-49	TRANSISTOR 2SC2712-YG
Q18	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q21	8-729-901-01	TRANSISTOR DTC144EK
Q22	8-729-140-97	TRANSISTOR 2SB734-34
Q23	8-729-230-49	TRANSISTOR 2SC2712-YG
Q24	8-729-140-97	TRANSISTOR 2SB734-34
Q25	8-729-216-22	TRANSISTOR 2SA1162-G
Q26	8-729-216-22	TRANSISTOR 2SA1162-G
Q27	8-729-230-49	TRANSISTOR 2SC2712-YG
Q28	8-729-230-49	TRANSISTOR 2SC2712-YG
Q29	8-729-901-01	TRANSISTOR DTC144EK
Q30	8-729-901-01	TRANSISTOR DTC144EK

<RESISTOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
JR1	1-216-296-91	METAL GLAZE	0	5%	1/8W	
JR3	1-216-296-91	METAL GLAZE	0	5%	1/8W	
JR4	1-216-296-91	METAL GLAZE	0	5%	1/8W	
JR6	1-216-296-91	METAL GLAZE	0	5%	1/8W	
JR9	1-216-295-91	METAL GLAZE	0	5%	1/10W	
JR10	1-216-296-91	METAL GLAZE	0	5%	1/8W	
JR13	1-216-296-91	METAL GLAZE	0	5%	1/8W	
JR15	1-216-295-91	METAL GLAZE	0	5%	1/10W	
JR18	1-216-296-91	METAL GLAZE	0	5%	1/8W	
JR19	1-216-296-91	METAL GLAZE	0	5%	1/8W	
JR21	1-216-295-91	METAL GLAZE	0	5%	1/10W	
JR22	1-216-295-91	METAL GLAZE	0	5%	1/10W	
JR26	1-216-295-91	METAL GLAZE	0	5%	1/10W	
JR27	1-216-295-91	METAL GLAZE	0	5%	1/10W	
JR28	1-216-295-91	METAL GLAZE	0	5%	1/10W	
JR29	1-216-295-91	METAL GLAZE	0	5%	1/10W	
JR31	1-216-295-91	METAL GLAZE	0	5%	1/10W	
R44	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R45	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R46	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R47	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R48	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R49	1-216-021-00	METAL GLAZE	68	5%	1/10W	
R50	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R51	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R52	1-216-019-00	METAL GLAZE	56	5%	1/10W	
R67	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R68	1-216-019-00	METAL GLAZE	56	5%	1/10W	
R69	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R70	1-216-017-00	METAL GLAZE	47	5%	1/10W	
R72	1-216-029-00	METAL GLAZE	150	5%	1/10W	
R74	1-216-029-00	METAL GLAZE	150	5%	1/10W	
R75	1-216-017-00	METAL GLAZE	47	5%	1/10W	
R76	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R77	1-216-022-00	METAL GLAZE	75	5%	1/10W	
R78	1-215-866-11	METAL OXIDE	330	5%	1W	F
R79	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R80	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R81	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R82	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R83	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R84	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R85	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R86	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R87	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R89	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R91	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R92	1-216-689-11	METAL GLAZE	39K	5%	1/10W	
R93	⚠ 1-216-075-91	METAL GLAZE	12K	5%	1/10W	
R94	⚠ 1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R95	1-216-073-00	METAL GLAZE	10K	5%	1/10W	

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Ne les remplacer que par une piece portant le numero specifie.

QA

REF.NO.	PART NO.	DESCRIPTION				REMARK
R96	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R97	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R98	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R99	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R100	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R102	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R103	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R104	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R105	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R106	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R107	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R108	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R109	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R110	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R111	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R112	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R113	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R114	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R115	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R116	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R118	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R119	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R120	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R121	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R122	1-216-017-00	METAL GLAZE	47	5%	1/10W	
R123	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R126	1-249-417-11	CARBON	1K	5%	1/4W	F

<CRYSTAL>

REF.NO.	PART NO.	DESCRIPTION
X1	1-567-505-11	OSCILLATOR, CRYSTAL

****

*A-1270-343-A QA BOARD, COMPLETE (VPH-1044Q)
****
*A-1270-344-A QA BOARD, COMPLETE (VPH-1044QM)
****

<CAPACITOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
C1	1-104-792-51	ELECT	33MF	20%	16V	
C3	1-124-907-11	ELECT	10MF	20%	50V	
C4	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C5	1-104-792-51	ELECT	33MF	20%	16V	
C7	1-124-907-11	ELECT	10MF	20%	50V	
C8	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C9	1-104-792-51	ELECT	33MF	20%	16V	
C11	1-124-907-11	ELECT	10MF	20%	50V	
C12	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C13	1-104-792-51	ELECT	33MF	20%	16V	
C14	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C15	1-126-101-11	ELECT	100MF	20%	16V	
C16	1-104-792-51	ELECT	33MF	20%	16V	
C17	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C18	1-126-101-11	ELECT	100MF	20%	16V	
C19	1-124-907-11	ELECT	10MF	20%	50V	
C20	1-136-159-00	FILM	0.033MF	5%	50V	
C21	1-126-101-11	ELECT	100MF	20%	16V	
C22	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C23	1-124-119-00	ELECT	330MF	20%	16V	
C24	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C25	1-124-119-00	ELECT	330MF	20%	16V	
C26	1-126-101-11	ELECT	100MF	20%	16V	
C27	1-124-907-11	ELECT	10MF	20%	50V	
C28	1-163-107-00	CERAMIC CHIP	39PF	5%	50V	
C29	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C30	1-124-907-11	ELECT	10MF	20%	50V	
C31	1-124-907-11	ELECT	10MF	20%	50V	
C32	1-126-103-11	ELECT	470MF	20%	16V	
C33	1-163-101-00	CERAMIC CHIP	22PF	5%	50V	
C34	1-163-097-00	CERAMIC CHIP	15PF	5%	50V	
C35	1-124-477-11	ELECT	47MF	20%	16V	
C36	1-124-907-11	ELECT	10MF	20%	50V	
C37	1-163-031-11	CERAMIC CHIP	0.01MF		50V	
C39	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C40	1-124-907-11	ELECT	10MF	20%	50V	
C41	1-163-031-11	CERAMIC CHIP	0.01MF		50V	
C42	1-163-031-11	CERAMIC CHIP	0.01MF		50V	
C43	1-124-907-11	ELECT	10MF	20%	50V	
C44	1-163-031-11	CERAMIC CHIP	0.01MF		50V	
C45	1-163-243-11	CERAMIC CHIP	47PF	5%	50V	
C46	1-163-249-11	CERAMIC CHIP	82PF	5%	50V	
C47	1-124-907-11	ELECT	10MF	20%	50V	
C48	1-124-477-11	ELECT	47MF	20%	16V	
C49	1-124-903-11	ELECT	1MF	20%	50V	
C50	1-124-360-00	ELECT	1000MF	20%	16V	
C51	1-124-903-11	ELECT	1MF	20%	50V	
C52	1-124-477-11	ELECT	47MF	20%	16V	
C53	1-136-159-00	FILM	0.033MF	5%	50V	
C54	1-124-907-11	ELECT	10MF	20%	50V	
C55	1-124-907-11	ELECT	10MF	20%	50V	
C56	1-124-477-11	ELECT	47MF	20%	16V	
C57	1-124-120-11	ELECT	220MF	20%	16V	
C58	⚠1-124-907-91	ELECT	10MF	20%	50V	
C60	1-124-910-11	ELECT	47MF	20%	50V	
C61	1-124-910-11	ELECT	47MF	20%	50V	
C62	1-163-031-11	CERAMIC CHIP	0.01MF		50V	
C63	1-124-910-11	ELECT	47MF	20%	50V	
C64	1-124-910-11	ELECT	47MF	20%	50V	

<CONNECTOR>

REF.NO.	PART NO.	DESCRIPTION
CN107	*1-566-056-11	PIN, CONNECTOR 4P
CN108	*1-566-062-11	PIN, CONNECTOR 10P
CN109	*1-566-056-11	PIN, CONNECTOR 4P
CN110	*1-566-056-11	PIN, CONNECTOR 4P
CN111	*1-566-061-11	PIN, CONNECTOR 9P
CN112	*1-566-061-11	PIN, CONNECTOR 9P
CN113	*1-566-056-11	PIN, CONNECTOR 4P
CN114	*1-566-059-11	PIN, CONNECTOR 7P
CN115	*1-566-058-11	PIN, CONNECTOR 6P
CN116	*1-566-059-11	PIN, CONNECTOR 7P
CN117	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P
CN118	*1-566-055-11	PIN, CONNECTOR 3P

<DIODE>

REF.NO.	PART NO.	DESCRIPTION
D1	8-719-801-78	DIODE 1SS184
D2	8-719-801-78	DIODE 1SS184
D3	8-719-104-34	DIODE 1S2836
D4	8-719-801-78	DIODE 1SS184
D5	8-719-801-78	DIODE 1SS184
D6	8-719-801-78	DIODE 1SS184
D7	8-719-801-78	DIODE 1SS184
D8	8-719-800-76	DIODE 1SS226
D9	8-719-801-78	DIODE 1SS184
D10	8-719-801-78	DIODE 1SS184

QA

REF.NO.	PART NO.	DESCRIPTION	REMARK
D11	8-719-911-19	DIODE 1SS119	
D12	8-719-801-78	DIODE 1SS184	
D13	8-719-911-19	DIODE 1SS119	
D14	8-719-911-19	DIODE 1SS119	
D15	8-719-800-76	DIODE 1SS226	
D16	8-719-105-83	DIODE RD5.1M-B3	
D17	8-719-911-19	DIODE 1SS119	
D18	8-719-801-78	DIODE 1SS184	
D19	8-719-801-78	DIODE 1SS184	
D20	8-719-800-76	DIODE 1SS226	
D21	8-719-800-76	DIODE 1SS226	
D22	8-719-800-76	DIODE 1SS226	
D23	8-719-800-76	DIODE 1SS226	
		<DELAY LINE>	
DL1	1-409-582-11	DELAY LINE	
DL2	1-409-582-11	DELAY LINE	
		<IC>	
IC1	8-759-103-93	IC UPC393C	
IC2	8-759-300-71	IC HD14053BFP	
IC3	8-759-000-48	IC MC14052BCP	
IC4	8-759-300-71	IC HD14053BFP	
IC6	8-752-037-04	IC CX-7948A	
IC7	8-759-708-05	IC NJM78L05A	
IC8	8-759-708-08	IC NJM78L08A	
IC9	8-759-701-79	IC NJM7812FA	
IC10	8-759-701-79	IC NJM7812FA	
		<JACK>	
J1	1-537-062-11	TERMINAL BOARD, INPUT/OUTPUT	
		<TRANSISTOR>	
Q1	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q2	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q3	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q4	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q5	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q6	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q7	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q8	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q9	8-729-216-22	TRANSISTOR 2SA1162-G	
Q10	8-729-901-01	TRANSISTOR DTC144EK	
Q11	8-729-216-22	TRANSISTOR 2SA1162-G	
Q12	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q13	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q14	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q15	8-729-901-01	TRANSISTOR DTC144EK	
Q16	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q17	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q18	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q19	8-729-901-01	TRANSISTOR DTC144EK	
Q20	8-729-901-01	TRANSISTOR DTC144EK	
Q21	8-729-901-01	TRANSISTOR DTC144EK	
Q22	8-729-140-97	TRANSISTOR 2SB734-34	
Q23	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q24	8-729-140-97	TRANSISTOR 2SB734-34	
Q25	8-729-216-22	TRANSISTOR 2SA1162-G	
Q26	8-729-216-22	TRANSISTOR 2SA1162-G	
Q27	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q28	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q29	8-729-901-01	TRANSISTOR DTC144EK	
Q30	8-729-901-01	TRANSISTOR DTC144EK	
Q40	8-729-901-01	TRANSISTOR DTC144EK	
Q41	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q42	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q43	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q44	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q45	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q46	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q47	8-729-901-01	TRANSISTOR DTC144EK	
		<RESISTOR>	
JR1	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR2	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR3	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR4	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR5	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR6	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR7	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR8	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR9	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR10	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR13	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR14	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR15	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR16	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR17	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR18	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR19	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JR20	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR21	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR22	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR23	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR25	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR26	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR27	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR28	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR29	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR31	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1	1-215-394-00	METAL 75 1% 1/4W	
R2	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R3	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R4	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R5	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R6	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R7	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R8	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R9	1-215-394-00	METAL 75 1% 1/4W	
R10	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R11	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R12	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R13	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R14	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R15	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R16	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R17	1-215-394-00	METAL 75 1% 1/4W	
R18	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R19	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
R20	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R21	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R22	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R23	1-216-001-00	METAL GLAZE 10 5% 1/10W	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION				REMARK
R24	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R25	1-215-394-00	METAL	75	1%	1/4W	
R26	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R27	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R28	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R29	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R30	1-215-394-00	METAL	75	1%	1/4W	
R31	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R32	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R33	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R34	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R35	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R36	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R37	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R38	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R39	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R40	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R41	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R42	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R43	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R44	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R45	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R46	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R47	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R48	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R49	1-216-021-00	METAL GLAZE	68	5%	1/10W	
R50	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R51	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R52	1-216-019-00	METAL GLAZE	56	5%	1/10W	
R53	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R54	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R55	1-216-011-00	METAL GLAZE	27	5%	1/10W	
R56	1-216-011-00	METAL GLAZE	27	5%	1/10W	
R57	1-216-011-00	METAL GLAZE	27	5%	1/10W	
R58	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R59	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R60	1-216-671-11	METAL CHIP	6.8K	0.50%	1/10W	
R61	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R62	1-216-677-11	METAL CHIP	12K	0.50%	1/10W	
R63	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R64	1-216-671-11	METAL CHIP	6.8K	0.50%	1/10W	
R65	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R66	1-216-671-11	METAL CHIP	6.8K	0.50%	1/10W	
R67	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R68	1-216-019-00	METAL GLAZE	56	5%	1/10W	
R69	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R70	1-216-017-00	METAL GLAZE	47	5%	1/10W	
R71	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R72	1-216-029-00	METAL GLAZE	150	5%	1/10W	
R74	1-216-029-00	METAL GLAZE	150	5%	1/10W	
R76	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R77	1-216-022-00	METAL GLAZE	75	5%	1/10W	
R78	1-215-866-11	METAL OXIDE	330	5%	1W	F
R79	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R80	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R81	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R82	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R83	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R84	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R85	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R86	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R87	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R89	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R90	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R91	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R92	1-216-689-11	METAL GLAZE	39K	5%	1/10W	
R93	⚠ 1-216-075-91	METAL GLAZE	12K	5%	1/10W	
R94	⚠ 1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R95	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R96	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R97	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R98	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R99	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R100	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R102	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R103	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R104	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R105	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R106	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R107	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R108	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R109	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R110	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R111	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R112	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R113	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R114	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R115	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R116	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R117	1-216-646-11	METAL CHIP	620	0.50%	1/10W	(VPH-1044Q)
	1-216-652-11	METAL CHIP	1.1K	0.50%	1/10W	(VPH-1044QM)
R118	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R119	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R120	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R121	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R122	1-216-017-00	METAL GLAZE	47	5%	1/10W	
R123	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R125	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R126	1-249-417-11	CARBON	1K	5%	1/4W	F
R130	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R131	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R132	1-216-640-11	METAL CHIP	360	0.50%	1/10W	
R133	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R134	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R135	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R136	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R137	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R138	1-216-640-11	METAL CHIP	360	0.50%	1/10W	
R139	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R140	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R141	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R142	1-216-640-11	METAL CHIP	360	0.50%	1/10W	
R143	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R144	1-216-640-11	METAL CHIP	360	0.50%	1/10W	
R145	1-216-646-11	METAL CHIP	620	0.50%	1/10W	(VPH-1044Q)
	1-216-654-11	METAL CHIP	1.3K	0.50%	1/10W	(VPH-1044QM)
R148	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R149	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R150	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R151	1-216-017-00	METAL GLAZE	47	5%	1/10W	
R152	1-216-017-00	METAL GLAZE	47	5%	1/10W	
R153	1-216-039-00	METAL GLAZE	390	5%	1/10W	

QA CR CG

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION				REMARK
		<CRYSTAL>				
X1	1-567-505-11	OSCILLATOR, CRYSTAL				
**						
	*1-621-068-11	CR BOARD ********				
	⚠ 1-526-812-11	SOCKET, PICTURE TUBE				
	1-556-880-81	LEAD ASSY, HIGH-VOLTAGE				
	4-371-837-01	SPACER (TO-126), BN				
	*4-383-071-01	BRACKET, TRANSISTOR				
		<CAPACITOR>				
C701	1-101-006-00	CERAMIC	0.047MF		50V	
C702	1-136-165-00	FILM	0.1MF	5%	50V	
C704	⚠ 1-126-174-51	ELECT	10MF	20%	350V	
C705	1-102-050-00	CERAMIC	0.01MF		500V	
C706	1-162-115-00	CERAMIC	330PF	10%	2KV	
C707	1-162-115-00	CERAMIC	330PF	10%	2KV	
C708	1-106-359-00	MYLAR	0.0047MF	5%	50V	
C709	1-101-006-00	CERAMIC	0.047MF		50V	
		<CONNECTOR>				
CR1	1-508-784-00	PIN, CONNECTOR (5MM PITCH) 1P				
CR2	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P				
CR3	*1-566-058-11	PIN, CONNECTOR 6P				
CR4	*1-566-057-11	PIN, CONNECTOR 5P				
CR5	*1-566-054-11	PIN, CONNECTOR 2P				
		<DIODE>				
D701	8-719-911-19	DIODE 1SS119				
D702	8-719-911-19	DIODE 1SS119				
D703	8-719-911-19	DIODE 1SS119				
D704	8-719-911-19	DIODE 1SS119				
D705	8-719-911-19	DIODE 1SS119				
D706	8-719-911-19	DIODE 1SS119				
D707	8-719-110-36	DIODE RD13ESB2				
		<COIL>				
L701	1-408-159-00	COIL, SPOOK CHOKE 3.3UH				
L702	1-408-159-00	COIL, SPOOK CHOKE 3.3UH				
L703	1-408-413-00	INDUCTOR	22UH			
L704	1-408-413-00	INDUCTOR	22UH			
		<NEON LAMP>				
NL701	1-519-108-99	LAMP, NEON				
		<TRANSISTOR>				
Q701	8-729-821-02	TRANSISTOR 2SC3503-DE				
Q702	8-729-821-02	TRANSISTOR 2SC3503-DE				
Q703	8-729-801-88	TRANSISTOR 2SA1381-E				
Q704	8-729-801-88	TRANSISTOR 2SA1381-E				
		<RESISTOR>				
R701	1-249-405-11	CARBON	100	5%	1/4W	F
R703	1-249-405-11	CARBON	100	5%	1/4W	F

REF.NO.	PART NO.	DESCRIPTION				REMARK
R704	1-215-928-11	METAL OXIDE	68K	5%	3W	F
R705	1-215-431-00	METAL	2.7K	1%	1/4W	
R706	1-216-510-11	METAL OXIDE	8.2K	5%	5W	F
R707	1-247-700-11	CARBON	100	5%	1/4W	F
R708	1-202-561-00	SOLID	330	10%	1/2W	
R709	1-202-828-11	SOLID	6.8K	10%	1/2W	
R710	1-202-847-00	SOLID	560K	10%	1/2W	
R711	1-202-847-00	SOLID	560K	10%	1/2W	
R712	1-202-814-11	SOLID	33K	10%	1/2W	
R713	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R714	1-202-818-00	SOLID	1K	10%	1/2W	
		<SPARK GAP>				
SG701	1-519-063-99	DISCHARGING GAP				
**						
	*1-621-069-11	CG BOARD ********				
	⚠ 1-526-812-11	SOCKET, PICTURE TUBE				
	1-556-880-81	LEAD ASSY, HIGH-VOLTAGE				
	4-371-837-01	SPACER (TO-126), BN				
	*4-383-071-01	BRACKET, TRANSISTOR				
		<CAPACITOR>				
C721	1-101-006-00	CERAMIC	0.047MF		50V	
C722	1-136-165-00	FILM	0.1MF	5%	50V	
C724	⚠ 1-126-174-51	ELECT	10MF	20%	350V	
C725	1-102-050-00	CERAMIC	0.01MF		500V	
C726	1-162-115-00	CERAMIC	330PF	10%	2KV	
C727	1-162-115-00	CERAMIC	330PF	10%	2KV	
C728	1-106-359-00	MYLAR	0.0047MF	5%	50V	
C729	1-101-006-00	CERAMIC	0.047MF		50V	
		<CONNECTOR>				
CG1	1-508-784-00	PIN, CONNECTOR (5MM PITCH) 1P				
CG2	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P				
CG3	*1-566-058-11	PIN, CONNECTOR 6P				
CG4	*1-566-057-11	PIN, CONNECTOR 5P				
CG5	*1-566-054-11	PIN, CONNECTOR 2P				
		<DIODE>				
D721	8-719-911-19	DIODE 1SS119				
D722	8-719-911-19	DIODE 1SS119				
D723	8-719-911-19	DIODE 1SS119				
D724	8-719-911-19	DIODE 1SS119				
D725	8-719-911-19	DIODE 1SS119				
D726	8-719-911-19	DIODE 1SS119				
D727	8-719-110-36	DIODE RD13ESB2				
		<COIL>				
L721	1-408-159-00	COIL, SPOOK CHOKE 3.3UH				
L722	1-408-159-00	COIL, SPOOK CHOKE 3.3UH				
L723	1-408-413-00	INDUCTOR	22UH			
L724	1-408-413-00	INDUCTOR	22UH			
		<NEON LAMP>				
NL721	1-519-108-99	LAMP, NEON				

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Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

<TRANSISTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q721	8-729-821-02	TRANSISTOR 2SC3503-DE	
Q722	8-729-821-02	TRANSISTOR 2SC3503-DE	
Q723	8-729-801-88	TRANSISTOR 2SA1381-E	
Q724	8-729-801-88	TRANSISTOR 2SA1381-E	

<RESISTOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
R721	1-249-405-11	CARBON	100	5%	1/4W	F
R723	1-249-405-11	CARBON	100	5%	1/4W	F
R724	1-215-928-11	METAL OXIDE	68K	5%	3W	F
R725	1-215-431-00	METAL	2.7K	1%	1/4W	
R726	1-216-510-11	METAL OXIDE	8.2K	5%	5W	F
R727	1-247-700-11	CARBON	100	5%	1/4W	F
R728	1-202-561-00	SOLID	330	10%	1/2W	
R729	1-202-828-11	SOLID	6.8K	10%	1/2W	
R730	1-202-847-00	SOLID	560K	10%	1/2W	
R731	1-202-847-00	SOLID	560K	10%	1/2W	
R732	1-202-814-11	SOLID	33K	10%	1/2W	
R733	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R734	1-202-818-00	SOLID	1K	10%	1/2W	

<SPARK GAP>

REF.NO.	PART NO.	DESCRIPTION	REMARK
SG721	1-519-063-99	DISCHARGING GAP	

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REF.NO.	PART NO.	DESCRIPTION	REMARK
	*1-621-070-11	CB BOARD ********	
	⚠1-526-812-11	SOCKET, PICTURE TUBE	
	1-556-880-81	LEAD ASSY, HIGH-VOLTAGE	
	4-371-837-01	SPACER (TO-126), BN	
	*4-383-071-01	BRACKET, TRANSISTOR	

<CAPACITOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
C741	1-101-006-00	CERAMIC	0.047MF		50V	
C742	1-136-165-00	FILM	0.1MF	5%	50V	
C744	⚠1-126-174-51	ELECT	10MF	20%	350V	
C745	1-102-050-00	CERAMIC	0.01MF		500V	
C746	1-162-115-00	CERAMIC	330PF	10%	2KV	
C747	1-162-115-00	CERAMIC	330PF	10%	2KV	
C748	1-106-359-00	MYLAR	0.0047MF	5%	50V	
C749	1-101-006-00	CERAMIC	0.047MF		50V	

<CONNECTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
CB1	1-508-784-00	PIN, CONNECTOR (5MM PITCH) 1P	
CB2	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P	
CB3	*1-566-058-11	PIN, CONNECTOR 6P	
CB4	*1-566-057-11	PIN, CONNECTOR 5P	
CB5	*1-566-054-11	PIN, CONNECTOR 2P	

<DIODE>

REF.NO.	PART NO.	DESCRIPTION	REMARK
D741	8-719-911-19	DIODE 1SS119	
D742	8-719-911-19	DIODE 1SS119	
D743	8-719-911-19	DIODE 1SS119	
D744	8-719-911-19	DIODE 1SS119	
D745	8-719-911-19	DIODE 1SS119	
D746	8-719-911-19	DIODE 1SS119	
D747	8-719-110-36	DIODE RD13ESB2	

<COIL>

REF.NO.	PART NO.	DESCRIPTION		REMARK
L741	1-408-159-00	COIL, SPOOK CHOKE 3.3UH		
L742	1-408-159-00	COIL, SPOOK CHOKE 3.3UH		
L743	1-408-413-00	INDUCTOR	22UH	
L744	1-408-413-00	INDUCTOR	22UH	

<NEON LAMP>

REF.NO.	PART NO.	DESCRIPTION	REMARK
NL741	1-519-108-99	LAMP, NEON	

<TRANSISTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q741	8-729-821-02	TRANSISTOR 2SC3503-DE	
Q742	8-729-821-02	TRANSISTOR 2SC3503-DE	
Q743	8-729-801-88	TRANSISTOR 2SA1381-E	
Q744	8-729-801-88	TRANSISTOR 2SA1381-E	

<RESISTOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
R741	1-249-405-11	CARBON	100	5%	1/4W	F
R743	1-249-405-11	CARBON	100	5%	1/4W	F
R744	1-215-928-11	METAL OXIDE	68K	5%	3W	F
R745	1-215-431-00	METAL	2.7K	1%	1/4W	
R746	1-216-510-11	METAL OXIDE	8.2K	5%	5W	F
R747	1-247-700-11	CARBON	100	5%	1/4W	F
R748	1-202-561-00	SOLID	330	10%	1/2W	
R749	1-202-828-11	SOLID	6.8K	10%	1/2W	
R750	1-202-847-00	SOLID	560K	10%	1/2W	
R751	1-202-847-00	SOLID	560K	10%	1/2W	
R752	1-202-814-11	SOLID	33K	10%	1/2W	
R753	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R754	1-202-818-00	SOLID	1K	10%	1/2W	

<SPARK GAP>

REF.NO.	PART NO.	DESCRIPTION	REMARK
SG741	1-519-063-99	DISCHARGING GAP	

****

REF.NO.	PART NO.	DESCRIPTION	REMARK
	*A-1340-922-A	E BOARD, COMPLETE ***************** (INCLUDING EB,EC BOARD)	
	4-383-022-01	SPACER, MICA	

<CAPACITOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
C1	1-123-947-00	ELECT	10MF	20%	160V	
C2	1-124-902-00	ELECT	0.47MF	20%	50V	
C3	1-102-106-00	CERAMIC	100PF	10%	50V	
C4	1-102-030-00	CERAMIC	330PF	10%	500V	
C5	1-108-700-11	MYLAR	0.047MF	10%	200V	
C6	1-102-030-00	CERAMIC	330PF	10%	500V	
C7	1-108-700-11	MYLAR	0.047MF	10%	200V	
C8	1-123-024-21	ELECT	33MF		160V	
C9	1-136-113-00	FILM	2MF	5%	200V	
C10	1-136-113-00	FILM	2MF	5%	200V	
C11	1-130-706-00	FILM	0.008MF	3%	1.6KV	
C12	1-124-662-11	ELECT	220MF	20%	50V	
C13	1-124-662-11	ELECT	220MF	20%	50V	
C14	1-124-662-11	ELECT	220MF	20%	50V	
C15	1-101-004-00	CERAMIC	0.01MF		50V	
C16	1-124-903-11	ELECT	1MF	20%	50V	
C17	1-124-915-11	ELECT	10MF	20%	25V	

E **EB**

REF.NO.	PART NO.	DESCRIPTION				REMARK
C18	1-124-589-11	ELECT	47MF	20%		16V
C19	1-108-692-11	MYLAR	0.01MF	10%		200V
C20	1-136-153-00	FILM	0.01MF	5%		50V
C21	1-136-153-00	FILM	0.01MF	5%		50V
C24	1-101-006-00	CERAMIC	0.047MF			50V
C25	1-104-665-11	ELECT	100MF	20%		16V
C26	1-104-665-11	ELECT	100MF	20%		16V
C27	1-101-006-00	CERAMIC	0.047MF			50V
C28	1-101-006-00	CERAMIC	0.047MF			50V
C29	1-126-964-11	ELECT	10MF	20%		16V
C30	1-126-964-11	ELECT	10MF	20%		16V
C31	1-101-006-00	CERAMIC	0.047MF			50V
C32	1-124-915-11	ELECT	10MF	20%		25V
C33	1-104-665-11	ELECT	100MF	20%		16V
C34	1-108-704-11	MYLAR	0.1MF	10%		200V
C35	1-102-125-00	CERAMIC	0.0047MF	10%		50V

<DIODE>

D1	8-719-300-80	DIODE RU-1C
D2	8-719-300-80	DIODE RU-1C
D3	8-719-971-20	DIODE ERC38-06
D4	8-719-971-20	DIODE ERC38-06
D6	8-719-109-98	DIODE RD6.8ESB3
D7	8-719-110-09	DIODE RD8.2ESB3
D8	8-719-911-19	DIODE 1SS119
D9	8-719-109-98	DIODE RD6.8ESB3
D10	8-719-911-19	DIODE 1SS119

<CONNECTOR>

E1	*1-506-371-00	PIN, CONNECTOR 2P
E2	*1-506-371-00	PIN, CONNECTOR 2P
E3	*1-506-371-00	PIN, CONNECTOR 2P
E4	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P
E5	*1-566-060-11	PIN, CONNECTOR 8P
E6	*1-566-055-11	PIN, CONNECTOR 3P
E7	*1-566-062-11	PIN, CONNECTOR 10P
E8	*1-566-060-11	PIN, CONNECTOR 8P
E9	*1-566-055-11	PIN, CONNECTOR 3P
E11	*1-566-055-11	PIN, CONNECTOR 3P

<IC>

IC1	8-759-708-12	IC NJM78L12A
IC2	8-759-145-58	IC UPC4558C
IC3	8-759-929-65	IC LM7912CT

<COIL>

L1	1-459-155-00	COIL (WITH CORE) 45UH
L2	1-459-155-00	COIL (WITH CORE) 45UH
L5	1-459-241-12	COIL, HORIZONTAL LINIALITY
L6	1-459-348-00	COIL, VAR, FERRITE (HWC)
L7	1-459-348-00	COIL, VAR, FERRITE (HWC)
L8	1-459-348-00	COIL, VAR, FERRITE (HWC)

<TRANSISTOR>

Q1	8-729-800-80	TRANSISTOR 2SD1399-CA
Q2	8-729-902-00	TRANSISTOR 2SC3163
Q3	8-729-119-80	TRANSISTOR 2SC2688-LK
Q4	8-729-119-80	TRANSISTOR 2SC2688-LK
Q5	8-729-802-71	TRANSISTOR 2SA1407-D

REF.NO.	PART NO.	DESCRIPTION				REMARK
Q6	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q7	8-729-900-85	TRANSISTOR DTC144WS				
Q9	8-729-119-76	TRANSISTOR 2SA1175-HFE				

<RESISTOR>

R1	1-249-417-11	CARBON	1K	5%	1/4W	
R2	1-217-206-11	WIREWOUND	3.3	10%	2W	F
R3	1-249-417-11	CARBON	1K	5%	1/4W	F
R4	1-249-469-11	CARBON	100K	5%	1/4W	
R5	1-249-423-11	CARBON	3.3K	5%	1/4W	
R6	1-249-429-11	CARBON	10K	5%	1/4W	F
R7	1-215-921-11	METAL OXIDE	4.7K	5%	3W	F
R8	1-249-429-11	CARBON	10K	5%	1/4W	F
R9	1-215-924-00	METAL OXIDE	15K	5%	3W	F
R10	1-215-880-00	METAL OXIDE	10	5%	2W	F
R12	1-216-379-11	METAL OXIDE	6.8	5%	2W	F
R13	1-215-868-00	METAL OXIDE	680	5%	1W	F
R14	1-247-716-11	CARBON	1.8K	5%	1/4W	F
R15	1-247-716-11	CARBON	1.8K	5%	1/4W	F
R16	1-247-716-11	CARBON	1.8K	5%	1/4W	F
R17	1-249-385-11	CARBON	2.2	5%	1/4W	F
R18	1-249-385-11	CARBON	2.2	5%	1/4W	F
R19	1-249-385-11	CARBON	2.2	5%	1/4W	F
R20	1-247-807-31	CARBON	100	5%	1/4W	
R21	1-249-423-11	CARBON	3.3K	5%	1/4W	
R22	1-249-440-11	CARBON	82K	5%	1/4W	
R25	1-215-469-00	METAL	100K	1%	1/4W	
R26	1-215-443-00	METAL	8.2K	1%	1/4W	
R27	1-215-455-00	METAL	27K	1%	1/4W	
R28	1-215-475-00	METAL	180K	1%	1/4W	
R29	1-215-475-00	METAL	180K	1%	1/4W	
R30	1-215-455-00	METAL	27K	1%	1/4W	
R31	1-247-893-11	CARBON	390K	5%	1/4W	
R32	1-249-417-11	CARBON	1K	5%	1/4W	
R33	1-247-895-00	CARBON	470K	5%	1/4W	
R34	1-215-485-00	METAL	470K	1%	1/4W	
R41	1-215-863-11	METAL OXIDE	100	5%	1W	F
R42	1-249-435-11	CARBON	33K	5%	1/4W	
R43	1-215-477-00	METAL	220K	1%	1/4W	
R44	1-249-413-11	CARBON	470	5%	1/4W	
R45	1-247-725-11	CARBON	10K	5%	1/4W	
R46	1-249-421-11	CARBON	2.2K	5%	1/4W	
R47	1-249-429-11	CARBON	10K	5%	1/4W	
R48	1-215-419-00	METAL	820	1%	1/4W	

<TRANSFORMER>

T1	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE
T2	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE
T3	1-439-320-00	TRANSFORMER, FERRITE (HOT)

****

*1-621-055-11 EB BOARD
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<CAPACITOR>

C1	1-126-163-11	ELECT	4.7MF	20%		25V
C2	1-126-163-11	ELECT	4.7MF	20%		25V
C3	1-136-159-00	FILM	0.033MF	5%		50V
C5	1-102-106-00	CERAMIC	100PF	10%		50V
C6	1-130-475-00	MYLAR	0.0022MF	5%		50V
C7	1-126-157-11	ELECT	10MF	20%		16V

REF.NO.	PART NO.	DESCRIPTION	REMARK
C8	1-136-165-00	FILM 0.1MF 5% 50V	
		<DIODE>	
D1	8-719-911-19	DIODE 1SS119	
		<IC>	
IC1	8-759-100-75	IC UPC1394C	
		<RESISTOR>	
R1	1-215-441-00	METAL 6.8K 1% 1/4W	
R2	1-249-417-11	CARBON 1K 5% 1/4W	
R3	1-249-431-11	CARBON 15K 5% 1/4W	
R4	1-249-427-11	CARBON 6.8K 5% 1/4W	
R5	1-249-441-11	CARBON 100K 5% 1/4W	
R6	1-249-423-11	CARBON 3.3K 5% 1/4W	
R7	1-249-429-11	CARBON 10K 5% 1/4W	
R8	1-249-413-11	CARBON 470 5% 1/4W	
R9	1-249-428-11	CARBON 8.2K 5% 1/4W	
R10	1-249-437-11	CARBON 47K 5% 1/4W	
R11	1-247-895-00	CARBON 470K 5% 1/4W	
R12	1-249-435-11	CARBON 33K 5% 1/4W	
R13	1-215-441-00	METAL 6.8K 1% 1/4W	
R14	1-215-441-00	METAL 6.8K 1% 1/4W	
		<PLUG>	
W1	*1-506-602-11	PLUG, L TYPE (2.0MM PITCH) 5P	
W2	*1-506-602-11	PLUG, L TYPE (2.0MM PITCH) 5P	

****

REF.NO.	PART NO.	DESCRIPTION	REMARK
	*1-621-060-11	EC BOARD ********	
		<CAPACITOR>	
C1	1-161-379-00	CERAMIC 0.01MF 30% 25V	
C2	1-162-290-31	CERAMIC 470PF 10% 50V	
C3	1-162-290-31	CERAMIC 470PF 10% 50V	
		<IC>	
IC1	8-759-145-58	IC UPC4558C	
		<TRANSISTOR>	
Q1	8-729-205-96	TRANSISTOR 2SC3668-O	
Q2	8-729-205-94	TRANSISTOR 2SA1428-O	
		<RESISTOR>	
R1	1-215-423-00	METAL 1.2K 1% 1/4W	
R2	1-249-417-11	CARBON 1K 5% 1/4W	
R3	1-215-445-00	METAL 10K 1% 1/4W	
R4	1-215-445-00	METAL 10K 1% 1/4W	
R5	1-215-445-00	METAL 10K 1% 1/4W	
R6	1-215-445-00	METAL 10K 1% 1/4W	
R7	1-215-375-00	METAL 12 1% 1/4W	
R8	1-215-375-00	METAL 12 1% 1/4W	
R9	1-215-375-00	METAL 12 1% 1/4W	

REF.NO.	PART NO.	DESCRIPTION	REMARK
		<PLUG>	
W3	*1-506-603-11	PLUG, L TYPE (2.0MM PITCH) 10P	

****

REF.NO.	PART NO.	DESCRIPTION	REMARK
	*1-622-694-21	ED BOARD ********	
		<CONNECTOR>	
ED1	*1-566-055-11	PIN, CONNECTOR 3P	
		<COIL>	
L1	1-459-109-00	COIL, DUST CORE	
L2	1-459-109-00	COIL, DUST CORE	
		<RESISTOR>	
R1	1-215-902-11	METAL OXIDE 47K 5% 1W	F

****

REF.NO.	PART NO.	DESCRIPTION	REMARK
	*A-1341-784-A	DY1 BOARD, COMPLETE ******************	
		<CAPACITOR>	
C701	1-162-115-00	CERAMIC 330PF 10% 2KV	
C702	1-162-115-00	CERAMIC 330PF 10% 2KV	
		<CONNECTOR>	
CN701	*1-566-041-11	PIN, CONNECTOR 2P	
CN702	*1-566-041-11	PIN, CONNECTOR 2P	
CN703	*1-566-042-11	PIN, CONNECTOR 3P	
CN704	*1-691-961-11	PIN, CONNECTOR (PC BOARD) 2P	
		<RESISTOR>	
R701	1-202-822-00	SOLID 2.2K 20% 1/2W	
R702	1-202-822-00	SOLID 2.2K 20% 1/2W	
		<SPARK GAP>	
SG701	1-519-422-11	GAP, SPARK	
SG702	1-519-422-11	GAP, SPARK	

****

REF.NO.	PART NO.	DESCRIPTION	REMARK
	*A-1341-785-A	DY2 BOARD, COMPLETE ******************	
		<CONNECTOR>	
CN5	*1-566-043-11	PIN, CONNECTOR 4P	

****

REF.NO.	PART NO.	DESCRIPTION	REMARK
	*A-1341-786-A	D BOARD, COMPLETE ***************** (INCLUDING DA,DB BOARD)	
	*1-535-615-11	TERMINAL (LAMP SOCKET)	
	*4-378-621-01	RETAINER, TR	

D

<CAPACITOR>

REF.NO.	PART NO.	DESCRIPTION			REMARK
C1	1-101-004-00	CERAMIC	0.01MF		50V
C2	1-124-478-11	ELECT	100MF	20%	25V
C3	1-124-478-11	ELECT	100MF	20%	25V
C4	1-126-101-11	ELECT	100MF	20%	16V
C5	1-126-101-11	ELECT	100MF	20%	16V
C6	1-102-947-00	CERAMIC	10PF	0.5PF	50V
C7	1-124-925-11	ELECT	2.2MF	20%	50V
C8	1-101-361-00	CERAMIC	150PF	5%	50V
C9	1-137-370-11	FILM	0.01MF	5%	50V
C10	1-137-399-11	FILM	0.1MF	5%	50V
C12	1-124-925-11	ELECT	2.2MF	20%	50V
C13	1-137-372-11	FILM	0.022MF	5%	50V
C14	1-124-907-11	ELECT	10MF	20%	50V
C15	1-126-103-11	ELECT	470MF	20%	16V
C16	1-101-006-00	CERAMIC	0.047MF		50V
C17	1-124-903-11	ELECT	1MF	20%	50V
C18	1-137-370-11	FILM	0.01MF	5%	50V
C19	1-130-480-00	FILM	0.0056MF	5%	50V
C20	1-124-903-11	ELECT	1MF	20%	50V
C21	1-124-927-11	ELECT	4.7MF	20%	50V
C22	1-124-907-11	ELECT	10MF	20%	50V
C23	1-126-103-11	ELECT	470MF	20%	16V
C25	1-124-903-11	ELECT	1MF	20%	50V
C26	1-137-374-11	FILM	0.047MF	5%	50V
C27	1-137-370-11	FILM	0.01MF	5%	50V
C28	1-137-372-11	FILM	0.022MF	5%	50V
C29	1-124-902-00	ELECT	0.47MF	20%	50V
C30	1-136-173-00	FILM	0.47MF	5%	50V
C31	1-137-374-11	FILM	0.047MF	5%	50V
C32	1-124-120-11	ELECT	220MF	20%	16V
C33	1-137-364-11	FILM	0.001MF	5%	50V
C34	1-101-004-00	CERAMIC	0.01MF		50V
C36	1-137-370-11	FILM	0.01MF	5%	50V
C37	1-124-282-00	ELECT	22MF	20%	16V
C38	1-104-792-51	ELECT	33MF	20%	16V
C39	1-137-399-11	FILM	0.1MF	5%	50V
C40	1-124-463-00	ELECT	0.1MF	20%	50V
C41	1-101-361-00	CERAMIC	150PF	5%	50V
C43	1-124-463-00	ELECT	0.1MF	20%	50V
C44	1-124-907-11	ELECT	10MF	20%	50V
C45	1-102-824-00	CERAMIC	470PF	5%	50V
C46	1-102-030-00	CERAMIC	330PF	10%	500V
C47	1-137-370-11	FILM	0.01MF	5%	50V
C48	1-101-004-00	CERAMIC	0.01MF		50V
C49	1-101-004-00	CERAMIC	0.01MF		50V
C50	1-124-927-11	ELECT	4.7MF	20%	50V
C51	1-126-177-11	ELECT	100MF	20%	6.3V
C52	1-126-177-11	ELECT	100MF	20%	6.3V
C53	1-126-157-11	ELECT	10MF	20%	16V
C54	1-101-004-00	CERAMIC	0.01MF		50V
C55	1-124-589-11	ELECT	47MF	20%	16V
C56	1-124-589-11	ELECT	47MF	20%	16V
C57	1-101-004-00	CERAMIC	0.01MF		50V
C58	1-126-177-11	ELECT	100MF	20%	6.3V
C59	1-126-177-11	ELECT	100MF	20%	6.3V
C60	1-126-157-11	ELECT	10MF	20%	16V
C61	1-126-157-11	ELECT	10MF	20%	16V
C62	1-126-157-11	ELECT	10MF	20%	16V
C63	1-124-589-11	ELECT	47MF	20%	16V
C64	1-124-589-11	ELECT	47MF	20%	16V
C65	1-101-004-00	CERAMIC	0.01MF		50V
C66	1-101-004-00	CERAMIC	0.01MF		50V
C67	1-124-120-11	ELECT	220MF	20%	16V
C68	1-124-120-11	ELECT	220MF	20%	16V
C69	1-126-101-11	ELECT	100MF	20%	16V
C70	1-126-101-11	ELECT	100MF	20%	16V
C72	1-136-161-00	FILM	0.047MF	5%	50V
C73	1-101-004-00	CERAMIC	0.01MF		50V
C74	1-101-004-00	CERAMIC	0.01MF		50V
C75	1-102-316-00	CERAMIC	15PF	5%	500V
C76	1-106-367-00	MYLAR	0.01MF	10%	200V
C77	1-106-383-00	MYLAR	0.047MF		200V
C78	1-124-907-11	ELECT	10MF	20%	50V
C79	1-124-907-11	ELECT	10MF	20%	50V
C80	1-136-161-00	FILM	0.047MF	5%	50V
C81	1-136-161-00	FILM	0.047MF	5%	50V
C82	1-101-004-00	CERAMIC	0.01MF		50V
C83	1-101-004-00	CERAMIC	0.01MF		50V
C84	1-102-316-00	CERAMIC	15PF	5%	500V
C85	1-106-367-00	MYLAR	0.01MF	10%	200V
C86	1-102-316-00	CERAMIC	15PF	5%	500V
C87	1-106-367-00	MYLAR	0.01MF	10%	200V
C88	1-124-925-11	ELECT	2.2MF	20%	50V
C89	1-126-320-11	ELECT	10MF	20%	16V
C90	1-126-101-11	ELECT	100MF	20%	16V
C91	1-124-916-11	ELECT	22MF	20%	50V
C92	1-124-282-00	ELECT	22MF	20%	16V
C93	1-124-916-11	ELECT	22MF	20%	50V
C94	1-124-907-11	ELECT	10MF	20%	50V
C95	1-124-907-11	ELECT	10MF	20%	50V
C96	1-124-907-11	ELECT	10MF	20%	50V
C97	1-124-907-11	ELECT	10MF	20%	50V
C98	1-124-916-11	ELECT	22MF	20%	50V
C99	1-124-916-11	ELECT	22MF	20%	50V
C100	1-104-792-51	ELECT	33MF	20%	16V

<CONNECTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
CN401	*1-566-056-11	PIN, CONNECTOR 4P	
CN402	*1-566-054-11	PIN, CONNECTOR 2P	
CN403	*1-566-056-11	PIN, CONNECTOR 4P	
CN404	*1-566-054-11	PIN, CONNECTOR 2P	
CN405	*1-566-059-11	PIN, CONNECTOR 7P	
CN406	*1-566-060-11	PIN, CONNECTOR 8P	
CN407	*1-566-060-11	PIN, CONNECTOR 8P	
CN408	*1-566-057-11	PIN, CONNECTOR 5P	
CN410	*1-566-059-11	PIN, CONNECTOR 7P	
CN411	*1-566-056-11	PIN, CONNECTOR 4P	
CN412	*1-566-056-11	PIN, CONNECTOR 4P	
CN413	*1-566-056-11	PIN, CONNECTOR 4P	
CN414	*1-566-055-11	PIN, CONNECTOR 3P	
CN415	*1-566-055-11	PIN, CONNECTOR 3P	
CN416	*1-566-055-11	PIN, CONNECTOR 3P	
CN417	*1-566-055-11	PIN, CONNECTOR 3P	
CN418	*1-566-055-11	PIN, CONNECTOR 3P	
CN419	*1-566-055-11	PIN, CONNECTOR 3P	
CN422	*1-566-062-11	PIN, CONNECTOR 10P	
CN423	*1-566-056-11	PIN, CONNECTOR 4P	

<DIODE>

REF.NO.	PART NO.	DESCRIPTION	REMARK
D1	8-719-911-19	DIODE 1SS119	
D2	8-719-911-19	DIODE 1SS119	
D3	8-719-911-19	DIODE 1SS119	
D4	8-719-911-19	DIODE 1SS119	
D6	8-719-911-19	DIODE 1SS119	

REF.NO.	PART NO.	DESCRIPTION	REMARK
D7	8-719-911-19	DIODE 1SS119	
D8	8-719-911-19	DIODE 1SS119	
D9	8-719-911-19	DIODE 1SS119	
D10	8-719-911-19	DIODE 1SS119	
D11	8-719-911-19	DIODE 1SS119	
D12	8-719-911-19	DIODE 1SS119	
D13	8-719-110-36	DIODE RD13ESB2	
D14	8-719-911-19	DIODE 1SS119	
D15	8-719-911-19	DIODE 1SS119	
D16	8-719-911-19	DIODE 1SS119	
D17	8-719-911-19	DIODE 1SS119	
D18	8-719-911-19	DIODE 1SS119	
D19	8-719-911-19	DIODE 1SS119	
D20	8-719-109-85	DIODE RD5.1ESB2	
D21	8-719-109-85	DIODE RD5.1ESB2	
D23	8-719-110-41	DIODE RD15ESB2	
D24	8-719-110-41	DIODE RD15ESB2	
D29	8-719-109-85	DIODE RD5.1ESB2	

<IC>

REF.NO.	PART NO.	DESCRIPTION	REMARK
IC1	8-759-100-60	IC UPC1377C	
IC2	8-749-911-21	IC BX-1121	
IC3	8-759-040-53	IC MC14053BCP	
IC4	8-759-701-79	IC NJM7812FA	
IC5	8-759-701-88	IC NJM7912FA	
IC6	8-759-708-12	IC NJM78L12A	
IC7	8-759-708-12	IC NJM78L12A	
IC8	8-759-634-50	IC M5218AL	
IC9	8-741-112-20	IC BX-1122	
IC10	8-759-000-48	IC MC14052BCP	
IC11	8-759-634-50	IC M5218AL	
IC12	8-759-634-50	IC M5218AL	
IC13	8-759-634-50	IC M5218AL	
IC14	8-759-111-69	IC UPC1037HA	
IC15	8-759-111-69	IC UPC1037HA	
IC16	8-759-701-77	IC NJM7808FA	
IC17	8-759-701-86	IC NJM7908FA	
IC18	8-759-145-58	IC UPC4558C	
IC19	8-759-145-58	IC UPC4558C	
IC20	8-759-700-69	IC NJM79L12A	
IC21	8-759-145-58	IC UPC4558C	
IC22	8-759-145-58	IC UPC4558C	
IC23	8-759-145-58	IC UPC4558C	

<PILOT LAMP>

REF.NO.	PART NO.	DESCRIPTION	REMARK
PL1	1-518-590-11	LAMP, PILOT (WITH HOLDER)	
PL2	1-518-590-11	LAMP, PILOT (WITH HOLDER)	

<TRANSISTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q4	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q5	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q6	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q7	8-729-238-32	TRANSISTOR 2SC2383-0	
Q8	8-729-231-60	TRANSISTOR 2SD1406-YGR	
Q9	8-729-141-83	TRANSISTOR 2SB1094-LK	
Q10	8-729-238-32	TRANSISTOR 2SC2383-0	
Q11	8-729-231-60	TRANSISTOR 2SD1406-YGR	
Q12	8-729-141-83	TRANSISTOR 2SB1094-LK	
Q13	8-729-238-32	TRANSISTOR 2SC2383-0	
Q14	8-729-231-60	TRANSISTOR 2SD1406-YGR	
Q15	8-729-141-83	TRANSISTOR 2SB1094-LK	
Q16	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q17	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q18	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q19	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q20	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q21	8-729-900-89	TRANSISTOR DTC144ES	
Q22	8-729-900-89	TRANSISTOR DTC144ES	
Q23	8-729-105-73	TRANSISTOR 2SK523-L2	
Q24	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q25	8-729-900-89	TRANSISTOR DTC144ES	
Q26	8-729-105-73	TRANSISTOR 2SK523-L2	
Q27	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q28	8-729-900-89	TRANSISTOR DTC144ES	
Q30	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q31	8-729-900-89	TRANSISTOR DTC144ES	

<RESISTOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
R1	1-215-457-00	METAL	33K	1%	1/4W	
R2	1-215-467-00	METAL	82K	1%	1/4W	
R3	1-247-881-00	CARBON	120K	5%	1/4W	
R4	1-249-417-11	CARBON	1K	5%	1/4W	
R5	1-249-423-11	CARBON	3.3K	5%	1/4W	
R6	1-249-434-11	CARBON	27K	5%	1/4W	
R7	1-249-425-11	CARBON	4.7K	5%	1/4W	
R8	1-249-421-11	CARBON	2.2K	5%	1/4W	
R9	1-215-447-00	METAL	12K	1%	1/4W	
R10	1-249-417-11	CARBON	1K	5%	1/4W	
R11	1-215-445-00	METAL	10K	1%	1/4W	
R12	1-215-455-00	METAL	27K	1%	1/4W	
R13	1-249-417-11	CARBON	1K	5%	1/4W	
R14	1-249-441-11	CARBON	100K	5%	1/4W	
R15	1-215-447-00	METAL	12K	1%	1/4W	
R16	1-247-903-00	CARBON	1M	5%	1/4W	
R17	1-247-903-00	CARBON	1M	5%	1/4W	
R18	1-249-441-11	CARBON	100K	5%	1/4W	
R19	1-247-807-31	CARBON	100	5%	1/4W	
R20	1-249-417-11	CARBON	1K	5%	1/4W	
R21	1-247-895-00	CARBON	470K	5%	1/4W	
R22	1-249-417-11	CARBON	1K	5%	1/4W	
R23	1-215-467-00	METAL	82K	1%	1/4W	
R24	1-215-467-00	METAL	82K	1%	1/4W	
R25	1-249-424-11	CARBON	3.9K	5%	1/4W	
R26	1-249-433-11	CARBON	22K	5%	1/4W	
R27	1-249-431-11	CARBON	15K	5%	1/4W	
R28	1-249-428-11	CARBON	8.2K	5%	1/4W	
R29	1-249-408-11	CARBON	180	5%	1/4W	
R30	1-249-401-11	CARBON	47	5%	1/4W	
R31	1-249-417-11	CARBON	1K	5%	1/4W	
R32	1-249-417-11	CARBON	1K	5%	1/4W	
R33	1-215-458-00	METAL	36K	1%	1/4W	
R34	1-249-435-11	CARBON	33K	5%	1/4W	
R35	1-249-435-11	CARBON	33K	5%	1/4W	
R36	1-249-435-11	CARBON	33K	5%	1/4W	
R37	1-249-421-11	CARBON	2.2K	5%	1/4W	
R38	1-249-424-11	CARBON	3.9K	5%	1/4W	
R39	1-249-418-11	CARBON	1.2K	5%	1/4W	
R40	1-249-438-11	CARBON	56K	5%	1/4W	
R41	1-215-446-00	METAL	11K	1%	1/4W	
R42	1-215-447-00	METAL	12K	1%	1/4W	
R43	1-215-463-00	METAL	56K	1%	1/4W	

D

REF.NO.	PART NO.	DESCRIPTION				REMARK
R44	1-215-439-00	METAL	5.6K	1%	1/4W	
R45	1-215-439-00	METAL	5.6K	1%	1/4W	
R46	1-215-449-00	METAL	15K	1%	1/4W	
R47	1-249-441-11	CARBON	100K	5%	1/4W	
R48	1-249-433-11	CARBON	22K	5%	1/4W	
R49	1-249-417-11	CARBON	1K	5%	1/4W	
R50	1-249-428-11	CARBON	8.2K	5%	1/4W	
R51	1-247-807-31	CARBON	100	5%	1/4W	
R52	1-249-408-11	CARBON	180	5%	1/4W	
R53	1-249-427-11	CARBON	6.8K	5%	1/4W	
R54	1-215-415-00	METAL	560	1%	1/4W	
R55	1-215-415-00	METAL	560	1%	1/4W	
R56	1-247-807-31	CARBON	100	5%	1/4W	
R57	1-215-413-00	METAL	470	1%	1/4W	
R58	1-249-429-11	CARBON	10K	5%	1/4W	
R59	1-214-971-00	METAL	2M	1%	1/4W	
R60	1-215-467-00	METAL	82K	1%	1/4W	
R62	1-215-439-00	METAL	5.6K	1%	1/4W	
R63	1-215-431-00	METAL	2.7K	1%	1/4W	
R64	1-249-417-11	CARBON	1K	5%	1/4W	
R65	1-249-429-11	CARBON	10K	5%	1/4W	
R66	1-249-417-11	CARBON	1K	5%	1/4W	
R67	1-249-429-11	CARBON	10K	5%	1/4W	
R68	1-249-429-11	CARBON	10K	5%	1/4W	
R69	1-215-457-00	METAL	33K	1%	1/4W	
R70	1-215-421-00	METAL	1K	1%	1/4W	
R71	1-249-429-11	CARBON	10K	5%	1/4W	
R72	1-249-429-11	CARBON	10K	5%	1/4W	
R73	1-249-429-11	CARBON	10K	5%	1/4W	
R74	1-249-411-11	CARBON	330	5%	1/4W	
R75	1-249-411-11	CARBON	330	5%	1/4W	
R76	1-249-429-11	CARBON	10K	5%	1/4W	
R77	1-215-471-00	METAL	120K	1%	1/4W	
R78	1-215-443-00	METAL	8.2K	1%	1/4W	
R79	1-215-429-00	METAL	2.2K	1%	1/4W	
R80	1-215-437-00	METAL	4.7K	1%	1/4W	
R81	1-215-443-00	METAL	8.2K	1%	1/4W	
R82	1-215-453-00	METAL	22K	1%	1/4W	
R83	1-215-429-00	METAL	2.2K	1%	1/4W	
R84	1-215-437-00	METAL	4.7K	1%	1/4W	
R85	1-215-463-00	METAL	56K	1%	1/4W	
R86	1-215-445-00	METAL	10K	1%	1/4W	
R87	1-215-445-00	METAL	10K	1%	1/4W	
R88	1-249-429-11	CARBON	10K	5%	1/4W	
R89	1-215-445-00	METAL	10K	1%	1/4W	
R90	1-215-445-00	METAL	10K	1%	1/4W	
R91	1-249-429-11	CARBON	10K	5%	1/4W	
R92	1-215-449-00	METAL	15K	1%	1/4W	
R93	1-215-449-00	METAL	15K	1%	1/4W	
R94	1-215-461-00	METAL	47K	1%	1/4W	
R95	1-215-461-00	METAL	47K	1%	1/4W	
R96	1-215-451-00	METAL	18K	1%	1/4W	
R97	1-215-413-00	METAL	470	1%	1/4W	
R98	1-215-429-00	METAL	2.2K	1%	1/4W	
R99	1-215-417-00	METAL	680	1%	1/4W	
R100	1-247-887-00	CARBON	220K	5%	1/4W	
R101	1-249-429-11	CARBON	10K	5%	1/4W	
R102	1-215-451-00	METAL	18K	1%	1/4W	
R103	1-215-413-00	METAL	470	1%	1/4W	
R104	1-215-429-00	METAL	2.2K	1%	1/4W	
R105	1-215-417-00	METAL	680	1%	1/4W	
R106	1-247-887-00	CARBON	220K	5%	1/4W	
R107	1-214-702-00	METAL	75	1%	1/4W	
R108	1-249-429-11	CARBON	10K	5%	1/4W	
R109	1-215-417-00	METAL	680	1%	1/4W	
R110	1-247-807-31	CARBON	100	5%	1/4W	
R111	1-215-415-00	METAL	560	1%	1/4W	
R112	1-249-429-11	CARBON	10K	5%	1/4W	
R113	1-215-445-00	METAL	10K	1%	1/4W	
R114	1-215-457-00	METAL	33K	1%	1/4W	
R115	1-215-457-00	METAL	33K	1%	1/4W	
R116	1-215-457-00	METAL	33K	1%	1/4W	
R117	1-215-459-00	METAL	39K	1%	1/4W	
R118	1-215-459-00	METAL	39K	1%	1/4W	
R119	1-215-459-00	METAL	39K	1%	1/4W	
R120	1-215-479-00	METAL	270K	1%	1/4W	
R121	1-215-469-00	METAL	100K	1%	1/4W	
R122	1-215-479-00	METAL	270K	1%	1/4W	
R123	1-215-469-00	METAL	100K	1%	1/4W	
R124	1-215-427-00	METAL	1.8K	1%	1/4W	
R125	1-215-468-00	METAL	91K	1%	1/4W	
R126	1-215-443-00	METAL	8.2K	1%	1/4W	
R127	1-215-469-00	METAL	100K	1%	1/4W	
R128	1-215-467-00	METAL	82K	1%	1/4W	
R129	1-215-451-00	METAL	18K	1%	1/4W	
R130	1-215-459-00	METAL	39K	1%	1/4W	
R131	1-249-417-11	CARBON	1K	5%	1/4W	
R132	1-215-459-00	METAL	39K	1%	1/4W	
R134	1-215-449-00	METAL	15K	1%	1/4W	
R135	1-215-465-00	METAL	68K	1%	1/4W	
R136	1-215-451-00	METAL	18K	1%	1/4W	
R137	1-215-471-00	METAL	120K	1%	1/4W	
R138	1-215-463-00	METAL	56K	1%	1/4W	
R139	1-215-477-00	METAL	220K	1%	1/4W	
R140	1-215-469-00	METAL	100K	1%	1/4W	
R141	1-215-473-00	METAL	150K	1%	1/4W	
R142	1-215-469-00	METAL	100K	1%	1/4W	
R143	1-215-469-00	METAL	100K	1%	1/4W	
R144	1-215-469-00	METAL	100K	1%	1/4W	
R145	1-215-469-00	METAL	100K	1%	1/4W	
R146	1-215-455-00	METAL	27K	1%	1/4W	
R147	1-215-461-00	METAL	47K	1%	1/4W	
R148	1-215-463-00	METAL	56K	1%	1/4W	
R149	1-215-449-00	METAL	15K	1%	1/4W	
R150	1-215-457-00	METAL	33K	1%	1/4W	
R151	1-215-461-00	METAL	47K	1%	1/4W	
R152	1-215-461-00	METAL	47K	1%	1/4W	
R153	1-215-461-00	METAL	47K	1%	1/4W	
R154	1-215-461-00	METAL	47K	1%	1/4W	
R155	1-215-471-00	METAL	120K	1%	1/4W	
R156	1-215-463-00	METAL	56K	1%	1/4W	
R157	1-215-477-00	METAL	220K	1%	1/4W	
R158	1-215-469-00	METAL	100K	1%	1/4W	
R159	1-215-473-00	METAL	150K	1%	1/4W	
R160	1-215-469-00	METAL	100K	1%	1/4W	
R161	1-215-469-00	METAL	100K	1%	1/4W	
R162	1-215-469-00	METAL	100K	1%	1/4W	
R163	1-215-469-00	METAL	100K	1%	1/4W	
R164	1-215-455-00	METAL	27K	1%	1/4W	
R165	1-215-461-00	METAL	47K	1%	1/4W	
R166	1-215-463-00	METAL	56K	1%	1/4W	
R167	1-215-449-00	METAL	15K	1%	1/4W	
R168	1-215-457-00	METAL	33K	1%	1/4W	
R169	1-215-461-00	METAL	47K	1%	1/4W	
R170	1-215-461-00	METAL	47K	1%	1/4W	
R171	1-215-461-00	METAL	47K	1%	1/4W	
R172	1-215-461-00	METAL	47K	1%	1/4W	

REF.NO.	PART NO.	DESCRIPTION				REMARK
R173	1-215-441-00	METAL	6.8K	1%	1/4W	
R174	1-215-425-00	METAL	1.5K	1%	1/4W	
R175	1-215-425-00	METAL	1.5K	1%	1/4W	
R176	1-215-425-00	METAL	1.5K	1%	1/4W	
R177	1-215-441-00	METAL	6.8K	1%	1/4W	
R178	1-215-445-00	METAL	10K	1%	1/4W	
R179	1-215-457-00	METAL	33K	1%	1/4W	
R180	1-249-429-11	CARBON	10K	5%	1/4W	
R181	1-247-807-31	CARBON	100	5%	1/4W	
R182	1-247-807-31	CARBON	100	5%	1/4W	
R183	1-215-445-00	METAL	10K	1%	1/4W	
R184	1-215-417-00	METAL	680	1%	1/4W	
R185	1-249-393-11	CARBON	10	5%	1/4W	
R186	1-215-924-00	METAL OXIDE	15K	5%	3W	F
R187	1-215-875-11	METAL OXIDE	10K	5%	1W	F
R188	1-215-396-00	METAL	91	1%	1/4W	
R189	1-215-375-00	METAL	12	1%	1/4W	
R190	1-215-375-00	METAL	12	1%	1/4W	
R191	1-215-375-00	METAL	12	1%	1/4W	
R192	1-215-375-00	METAL	12	1%	1/4W	
R193	1-215-375-00	METAL	12	1%	1/4W	
R194	1-215-441-00	METAL	6.8K	1%	1/4W	
R195	1-249-429-11	CARBON	10K	5%	1/4W	
R196	1-215-441-00	METAL	6.8K	1%	1/4W	
R197	1-249-429-11	CARBON	10K	5%	1/4W	
R198	1-247-807-31	CARBON	100	5%	1/4W	
R199	1-247-807-31	CARBON	100	5%	1/4W	
R200	1-215-445-00	METAL	10K	1%	1/4W	
R201	1-215-417-00	METAL	680	1%	1/4W	
R202	1-249-393-11	CARBON	10	5%	1/4W	
R203	1-215-924-00	METAL OXIDE	15K	5%	3W	F
R204	1-215-875-11	METAL OXIDE	10K	5%	1W	F
R205	1-215-391-00	METAL	56	1%	1/4W	
R206	1-215-375-00	METAL	12	1%	1/4W	
R207	1-215-375-00	METAL	12	1%	1/4W	
R208	1-215-375-00	METAL	12	1%	1/4W	
R209	1-215-375-00	METAL	12	1%	1/4W	
R210	1-215-375-00	METAL	12	1%	1/4W	
R211	1-215-445-00	METAL	10K	1%	1/4W	
R212	1-215-417-00	METAL	680	1%	1/4W	
R213	1-249-393-11	CARBON	10	5%	1/4W	
R214	1-215-924-00	METAL OXIDE	15K	5%	3W	F
R215	1-215-875-11	METAL OXIDE	10K	5%	1W	F
R217	1-215-374-00	METAL	11	1%	1/4W	
R218	1-215-375-00	METAL	12	1%	1/4W	
R219	1-215-375-00	METAL	12	1%	1/4W	
R220	1-215-375-00	METAL	12	1%	1/4W	
R221	1-215-375-00	METAL	12	1%	1/4W	
R222	1-215-419-00	METAL	820	1%	1/4W	
R223	1-215-447-00	METAL	12K	1%	1/4W	
R224	1-214-802-00	METAL	2.7	1%	1/2W	
R225	1-214-804-11	METAL	3.3	1%	1/2W	
R226	1-214-802-00	METAL	2.7	1%	1/2W	
R227	1-214-804-11	METAL	3.3	1%	1/2W	
R228	1-214-802-00	METAL	2.7	1%	1/2W	
R229	1-214-804-11	METAL	3.3	1%	1/2W	
R230	1-215-469-00	METAL	100K	1%	1/4W	
R231	1-215-469-00	METAL	100K	1%	1/4W	
R232	1-249-429-11	CARBON	10K	5%	1/4W	
R233	1-247-901-11	CARBON	820K	5%	1/4W	
R234	1-247-901-11	CARBON	820K	5%	1/4W	
R235	1-247-897-11	CARBON	560K	5%	1/4W	
R236	1-247-897-11	CARBON	560K	5%	1/4W	
R237	1-249-441-11	CARBON	100K	5%	1/4W	
R238	1-249-433-11	CARBON	22K	5%	1/4W	
R239	1-249-433-11	CARBON	22K	5%	1/4W	
R240	1-215-467-00	METAL	82K	1%	1/4W	
R241	1-215-483-00	METAL	390K	1%	1/4W	
R242	1-215-473-00	METAL	150K	1%	1/4W	
R243	1-215-457-00	METAL	33K	1%	1/4W	
R244	1-215-457-00	METAL	33K	1%	1/4W	
R245	1-215-465-00	METAL	68K	1%	1/4W	
R246	1-215-453-00	METAL	22K	1%	1/4W	
R247	1-215-457-00	METAL	33K	1%	1/4W	
R248	1-215-469-00	METAL	100K	1%	1/4W	
R249	1-249-416-11	CARBON	820	5%	1/4W	
R250	1-249-417-11	CARBON	1K	5%	1/4W	
R251	1-247-807-31	CARBON	100	5%	1/4W	
R252	1-215-463-00	METAL	56K	1%	1/4W	
R253	1-215-461-00	METAL	47K	1%	1/4W	
R254	1-249-413-11	CARBON	470	5%	1/4W	
R255	1-249-429-11	CARBON	10K	5%	1/4W	
R256	1-249-423-11	CARBON	3.3K	5%	1/4W	
R257	1-249-423-11	CARBON	3.3K	5%	1/4W	
R258	1-249-433-11	CARBON	22K	5%	1/4W	
R259	1-249-429-11	CARBON	10K	5%	1/4W	
R260	1-249-433-11	CARBON	22K	5%	1/4W	
R261	1-249-433-11	CARBON	22K	5%	1/4W	
R262	1-249-441-11	CARBON	100K	5%	1/4W	
R263	1-215-910-00	METAL OXIDE	68	5%	3W	F
R264	1-215-910-00	METAL OXIDE	68	5%	3W	F
R265	1-215-910-00	METAL OXIDE	68	5%	3W	F
R266	1-215-910-00	METAL OXIDE	68	5%	3W	F
R268	1-249-421-11	CARBON	2.2K	5%	1/4W	
R269	1-249-421-11	CARBON	2.2K	5%	1/4W	
R270	1-249-429-11	CARBON	10K	5%	1/4W	
R271	1-249-441-11	CARBON	100K	5%	1/4W	
R272	1-249-429-11	CARBON	10K	5%	1/4W	
R273	1-215-437-00	METAL	4.7K	1%	1/4W	
R274	1-249-425-11	CARBON	4.7K	5%	1/4W	
R275	1-249-425-11	CARBON	4.7K	5%	1/4W	
R276	1-249-429-11	CARBON	10K	5%	1/4W	
R277	1-249-429-11	CARBON	10K	5%	1/4W	
R278	1-249-420-11	CARBON	1.8K	5%	1/4W	
R279	1-249-420-11	CARBON	1.8K	5%	1/4W	
R280	1-249-441-11	CARBON	100K	5%	1/4W	
R281	1-249-441-11	CARBON	100K	5%	1/4W	
R282	1-249-417-11	CARBON	1K	5%	1/4W	
R283	1-249-441-11	CARBON	100K	5%	1/4W	
R284	1-249-429-11	CARBON	10K	5%	1/4W	
R285	1-214-970-00	METAL	1.8M	1%	1/4W	
R286	1-249-427-11	CARBON	6.8K	5%	1/4W	
R287	1-249-427-11	CARBON	6.8K	5%	1/4W	
R288	1-247-807-31	CARBON	100	5%	1/4W	
R289	1-249-420-11	CARBON	1.8K	5%	1/4W	
R291	1-249-441-11	CARBON	100K	5%	1/4W	
R292	1-249-429-11	CARBON	10K	5%	1/4W	
R293	1-249-429-11	CARBON	10K	5%	1/4W	
R294	1-249-441-11	CARBON	100K	5%	1/4W	
R295	1-247-807-31	CARBON	100	5%	1/4W	
R296	1-249-417-11	CARBON	1K	5%	1/4W	
R301	1-215-407-00	METAL	270	1%	1/4W	
R302	1-215-436-00	METAL	4.3K	1%	1/4W	
R303	1-215-445-00	METAL	10K	1%	1/4W	
R304	1-215-455-00	METAL	27K	1%	1/4W	
R305	1-215-401-11	METAL	150	1%	1/4W	
R306	1-215-445-00	METAL	10K	1%	1/4W	

REF.NO.	PART NO.	DESCRIPTION	REMARK
R307	1-215-455-00	METAL 27K 1% 1/4W	
R308	1-215-445-00	METAL 10K 1% 1/4W	
R309	1-215-436-00	METAL 4.3K 1% 1/4W	
R310	1-215-407-00	METAL 270 1% 1/4W	
R311	1-215-445-00	METAL 10K 1% 1/4W	
R312	1-215-401-11	METAL 150 1% 1/4W	
R313	1-215-407-00	METAL 270 1% 1/4W	
R314	1-215-436-00	METAL 4.3K 1% 1/4W	
R315	1-215-445-00	METAL 10K 1% 1/4W	
R316	1-215-455-00	METAL 27K 1% 1/4W	
R317	1-215-401-11	METAL 150 1% 1/4W	
R318	1-215-445-00	METAL 10K 1% 1/4W	
R319	1-215-455-00	METAL 27K 1% 1/4W	
R320	1-215-445-00	METAL 10K 1% 1/4W	
R321	1-215-436-00	METAL 4.3K 1% 1/4W	
R322	1-215-407-00	METAL 270 1% 1/4W	
R323	1-215-445-00	METAL 10K 1% 1/4W	
R324	1-215-401-11	METAL 150 1% 1/4W	
R500	1-215-491-00	METAL 820K 1% 1/4W	

<VARIABLE RESISTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
RV1	1-241-763-11	RES, ADJ, CERMET 4.7K	
RV2	1-241-763-11	RES, ADJ, CERMET 4.7K	
RV3	1-238-019-11	RES, ADJ, CARBON 47K	
RV4	1-238-019-11	RES, ADJ, CARBON 47K	
RV5	1-241-630-11	RES, ADJ, CARBON 10K	
RV6	1-241-630-11	RES, ADJ, CARBON 10K	
RV7	1-241-630-11	RES, ADJ, CARBON 10K	
RV8	1-241-630-11	RES, ADJ, CARBON 10K	
RV9	1-241-630-11	RES, ADJ, CARBON 10K	
RV10	1-241-630-11	RES, ADJ, CARBON 10K	
RV11	1-241-630-11	RES, ADJ, CARBON 10K	
RV12	1-241-630-11	RES, ADJ, CARBON 10K	
RV13	1-241-630-11	RES, ADJ, CARBON 10K	
RV14	1-241-630-11	RES, ADJ, CARBON 10K	
RV15	1-241-630-11	RES, ADJ, CARBON 10K	
RV16	1-241-630-11	RES, ADJ, CARBON 10K	
RV17	1-241-630-11	RES, ADJ, CARBON 10K	
RV18	1-241-630-11	RES, ADJ, CARBON 10K	
RV19	1-241-630-11	RES, ADJ, CARBON 10K	
RV20	1-241-630-11	RES, ADJ, CARBON 10K	
RV21	1-241-630-11	RES, ADJ, CARBON 10K	
RV22	1-241-630-11	RES, ADJ, CARBON 10K	
RV23	1-241-630-11	RES, ADJ, CARBON 10K	
RV24	1-241-630-11	RES, ADJ, CARBON 10K	
RV25	1-241-630-11	RES, ADJ, CARBON 10K	
RV26	1-241-630-11	RES, ADJ, CARBON 10K	
RV27	1-241-630-11	RES, ADJ, CARBON 10K	
RV28	1-241-630-11	RES, ADJ, CARBON 10K	
RV29	1-241-630-11	RES, ADJ, CARBON 10K	
RV30	1-241-630-11	RES, ADJ, CARBON 10K	
RV31	1-241-630-11	RES, ADJ, CARBON 10K	
RV32	1-241-630-11	RES, ADJ, CARBON 10K	
RV33	1-241-630-11	RES, ADJ, CARBON 10K	
RV34	1-241-630-11	RES, ADJ, CARBON 10K	
RV35	1-241-630-11	RES, ADJ, CARBON 10K	
RV36	1-241-630-11	RES, ADJ, CARBON 10K	
RV37	1-241-630-11	RES, ADJ, CARBON 10K	
RV38	1-241-630-11	RES, ADJ, CARBON 10K	
RV39	1-241-630-11	RES, ADJ, CARBON 10K	
RV40	1-241-630-11	RES, ADJ, CARBON 10K	
RV41	1-241-630-11	RES, ADJ, CARBON 10K	
RV42	1-241-630-11	RES, ADJ, CARBON 10K	
RV43	1-241-630-11	RES, ADJ, CARBON 10K	
RV44	1-241-630-11	RES, ADJ, CARBON 10K	
RV45	1-241-630-11	RES, ADJ, CARBON 10K	
RV46	1-241-630-11	RES, ADJ, CARBON 10K	
RV47	1-241-630-11	RES, ADJ, CARBON 10K	
RV48	1-241-630-11	RES, ADJ, CARBON 10K	
RV49	1-241-630-11	RES, ADJ, CARBON 10K	
RV50	1-241-630-11	RES, ADJ, CARBON 10K	
RV51	1-241-630-11	RES, ADJ, CARBON 10K	
RV52	1-241-763-11	RES, ADJ, CERMET 4.7K	
RV53	1-241-764-11	RES, ADJ, CERMET 10K	

<SWITCH>

REF.NO.	PART NO.	DESCRIPTION	REMARK
S1	1-570-847-11	SWITCH, SLIDE	
S2	1-570-847-11	SWITCH, SLIDE	
S3	1-570-847-11	SWITCH, SLIDE	
S4	1-570-847-11	SWITCH, SLIDE	
S5	1-570-847-11	SWITCH, SLIDE	
S6	1-570-847-11	SWITCH, SLIDE	
S7	1-570-847-11	SWITCH, SLIDE	
S8	1-570-865-11	SWITCH, SLIDE	
S9	1-570-865-11	SWITCH, SLIDE	
S10	1-570-865-11	SWITCH, SLIDE	
S11	1-570-865-11	SWITCH, SLIDE	
S12	1-570-865-11	SWITCH, SLIDE	
S13	1-552-437-00	SWITCH, LEVER	

****

*A-1341-803 DA BOARD, COMPLETE
****

<CAPACITOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
C1	1-124-902-00	ELECT 0.47MF 20% 50V	
C2	1-124-925-11	ELECT 2.2MF 20% 50V	
C3	1-124-903-11	ELECT 1MF 20% 50V	
C4	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C6	1-136-166-00	FILM 0.12MF 5% 50V	

<CONNECTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
DA1	*1-766-312-11	PIN, CONNECTOR (PC BOARD) 3P	
DA2	*1-766-312-11	PIN, CONNECTOR (PC BOARD) 3P	

<TRANSISTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q1	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q2	8-729-216-22	TRANSISTOR 2SA1162-G	
Q3	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q4	8-729-216-22	TRANSISTOR 2SA1162-G	

<RESISTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
R1	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R2	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R3	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R4	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R5	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R6	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R7	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R8	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R9	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R10	1-216-295-91	METAL GLAZE 0 5% 1/10W	

VPH-1001Q/1001QM/1044Q/1044QM

RM-PJ1044

V09988

SONY®

SERVICE MANUAL

US Model
Canadian Model
VPH-1001Q
CHASSIS No. SCC-G90A-A
VPH-1044Q
CHASSIS No. SCC-G90B-A

AEP Model
VPH-1001QM
Chassis No. SCC-G89A-A
VPH-1044QM
Chassis No. SCC-G89B-A

CORRECTION-1

Correct the service manual as shown below.
File this correction with the service manual.

● **INTRODUCTION**

Delete the Note.

☞ : Indicates corrected portion

COVER

Incorrect	Correct
Note: The service manual for **RM-PJ1044** has been issued separatly	☞ : Delete the Note.

MICROFILM

9-978-423-91

Sony Corporation
B & I Systems Company

Englis
95DZ24137-
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REF.NO.	PART NO.	DESCRIPTION	REMARK
R11	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R12	1-202-730-00	SOLID 8.2M 5% 1/2W	

****

*1-621-059-11 DB BOARD
****

<CAPACITOR>

C1	1-162-211-31	CERAMIC 33PF 5% 50V	
C2	1-162-211-31	CERAMIC 33PF 5% 50V	
C3	1-162-290-31	CERAMIC 470PF 10% 50V	
C4	1-162-290-31	CERAMIC 470PF 10% 50V	

<IC>

IC1	8-759-106-41	IC UPC4570C	

<TRANSISTOR>

Q1	8-729-205-96	TRANSISTOR 2SC3668-0	
Q2	8-729-205-94	TRANSISTOR 2SA1428-0	
Q3	8-729-205-96	TRANSISTOR 2SC3668-0	
Q4	8-729-205-94	TRANSISTOR 2SA1428-0	

<RESISTOR>

R1	1-215-453-00	METAL 22K 1% 1/4W	
R2	1-215-453-00	METAL 22K 1% 1/4W	
R3	1-249-411-11	CARBON 330 5% 1/4W	
R4	1-249-411-11	CARBON 330 5% 1/4W	
R5	1-247-705-11	CARBON 270 5% 1/4W	
R6	1-247-705-11	CARBON 270 5% 1/4W	

<PLUG>

W1	*1-506-602-11	PLUG, L TYPE (2.0MM PITCH) 5P	
W2	*1-506-602-11	PLUG, L TYPE (2.0MM PITCH) 5P	

****

*A-1372-017-A HA BOARD, COMPLETE
****

<CONNECTOR>

CN321	*1-566-045-11	PIN, CONNECTOR 6P	

<SWITCH>

SW1	1-692-490-11	SWITCH, TACTILE (1 KEY)	
SW2	1-692-490-11	SWITCH, TACTILE (1 KEY)	
SW3	1-692-490-11	SWITCH, TACTILE (1 KEY)	
SW4	1-692-490-11	SWITCH, TACTILE (1 KEY)	
SW5	1-692-490-11	SWITCH, TACTILE (1 KEY)	
SW6	1-692-490-11	SWITCH, TACTILE (1 KEY)	
SW7	1-692-490-11	SWITCH, TACTILE (1 KEY)	

****

*A-1372-018-A HB BOARD, COMPLETE (VPH-1001Q/1001QM)
****
*A-1372-036-A HB BOARD, COMPLETE (VPH-1044Q/1044QM)
****

REF.NO.	PART NO.	DESCRIPTION	REMARK

<CONNECTOR>

CN322	*1-566-047-11	PIN, CONNECTOR 8P	

<SWITCH>

SW8	1-692-491-11	SWITCH, TACTILE (1 KEY)	
SW9	1-692-490-11	SWITCH, TACTILE (1 KEY)	
SW10	1-692-490-11	SWITCH, TACTILE (1 KEY)	
SW11	1-692-490-11	SWITCH, TACTILE (1 KEY)	(VPH-1044Q/1044QM)
SW12	1-692-490-11	SWITCH, TACTILE (1 KEY)	
SW13	1-692-490-11	SWITCH, TACTILE (1 KEY)	
SW14	1-692-490-11	SWITCH, TACTILE (1 KEY)	
SW15	1-692-490-11	SWITCH, TACTILE (1 KEY)	
SW16	1-692-490-11	SWITCH, TACTILE (1 KEY)	

****

*A-1372-019-A HC BOARD, COMPLETE (VPH-1001Q/1001QM)
****
*A-1372-037-A HC BOARD, COMPLETE (VPH-1044Q/1044QM)
****

<CONNECTOR>

CN327	*1-566-044-11	PIN, CONNECTOR 5P	

<VARIABLE RESISTOR>

RV1	1-223-406-11	RES, VAR, CARBON 20K	(VPH-1044Q/1044QM)
RV2	1-237-414-11	RES, VAR, CARBON 10K	

****

*A-1373-475-A Y BOARD, COMPLETE
****

*4-365-850-00 HOLDER, LED

<DIODE>

D401	8-719-420-94	DIODE LN342GPH	
D402	8-719-404-30	DIODE LN242RPH	

****

*1-621-051-21 X BOARD
****

<PILOT LAMP>

PL1	*1-535-615-11	TERMINAL (LAMP SOCKET)	

<CONNECTOR>

X1	*1-566-041-11	PIN, CONNECTOR 2P	
X2	*1-566-041-11	PIN, CONNECTOR 2P	

****

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

MISCELLANEOUS

REF.NO.	PART NO.	DESCRIPTION	REMARK
	⚠ 1-237-582-12	RESISTOR ASSY, HIGH-VOLTAGE	
	⚠ 1-413-289-11	REGULATOR, SWITCHING (TK-15)	
	⚠ 1-451-243-00	DEFLECTION YOKE (Y636PA)	
	⚠ 1-452-302-11	PICTURE TUBE NECK ASSEMBLY	
	⚠ 1-452-443-13	NECK ASSY, PICTURE TUBE (NA367)	
	⚠ 1-453-108-11	DC BLOCK, HIGH-VOLTAGE	
	1-503-255-00	SPEAKER	
	1-518-590-11	LAMP, PILOT (WITH HOLDER)	
	1-541-449-11	FAN, DC (WITH SENSOR)	
	⚠ 1-552-437-11	SWITCH, LEVER	
	⚠ 1-570-052-12	SWITCH, PUSH (AC POWER)(1 KEY)	
	⚠ *1-580-375-21	INLET 3P	
	1-698-046-11	FAN, DC	
V901	⚠ 8-736-244-05	PICTURE TUBE 07MS(G)	
V902	⚠ 8-736-245-05	PICTURE TUBE 07MS(B)	
V903	⚠ 8-736-246-05	PICTURE TUBE 07MS(R)	

****

ACCESSORIES AND PACKING MATERIALS

REF.NO.	PART NO.	DESCRIPTION	REMARK
	X-4029-384-1	COVER ASSY, LENS	
	1-466-802-21	RECEIVER, SONY REMOTE CONTROL	
	⚠ 1-558-377-11	CORD, POWER (6.0A/125V)(VPH-1001Q/1044Q)	
	⚠ 1-590-151-11	CORD SET, POWER (10.0/250V) (VPH-1001QM/1044QM)	
	1-696-607-11	CORD, CONNECTION (WITH PLUG)	
	3-758-842-21	MANUAL, INSTRUCTION (ENGLISH,FRENCH,DEUTSCH)	
	3-758-843-21	ESTABLISHMENT, INSTRUCTION (ENGLISH,FRENCH,DEUTSCH)	
	*4-039-963-01	CUSHION (UPPER) (ASSY)	
	*4-039-964-01	CUSHION (LOWER) (ASSY)	
	*4-039-966-11	SPACER (VPH-1044Q/1044QM)	
	*4-045-532-01	HOLDER (VPH-1001Q/1001QM)	
	*4-045-533-01	BOX, ACCESSORY	
	*4-045-554-01	INDIVIDUAL CARTON (VPH-1001QM)	
	*4-045-555-01	INDIVIDUAL CARTON (VPH-1001Q)	
	*4-045-658-01	INDIVIDUAL CARTON (VPH-1044QM)	
	*4-045-659-01	INDIVIDUAL CARTON (VPH-1044Q)	
	*4-310-638-00	BAG, PROTECTION	
	4-378-602-01	SPACER, 100"	
	4-378-685-01	SPACER, 200"	
	4-378-686-01	SPACER (200"), PICTURE TUBE	
	*4-383-076-11	SPACER (VPH-1001Q/1001QM)	

REMOTE COMMNDER

REF.NO.	PART NO.	DESCRIPTION	REMARK
	1-467-737-11	REMOTE COMMANDER (RM-PJ1044)	
	4-395-504-01	COVER, BATTERY (FOR RM-PJ1044)	

Sony Corporation
B & I Systems Company

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